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*Edited by*  
**Nirmal Kumar Bose**

# **MAN IN INDIA**

## **PUBLICATIONS**

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1. The Mundas and their Country
2. The Oraons of Chota Nagpur
3. Oraon Religion and Customs
4. The Kharias, 2 vols.
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# MAN IN INDIA

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## SOCIAL CHANGES IN BIHAR IN THE SECOND HALF OF THE 19TH CENTURY

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(Received on 29 January 1967)

**Abstract.** The most important event in the social life of Bihar in the second half of the 19th century was the emergence of an English-educated middle class as a result of the opening of new colleges and schools. This class did not completely lose its ties with village-life. It did not enter either industry or commerce ; and the Bihari capitalist class did not also emerge.

The Muslims did not lag behind the Hindus in the matter of Western education, and for some time actually held more gazetted posts in the government than the latter. This runs counter to the popular view that the Muslims after 1857 shunned English education and governmental jobs.

No major reform movement originated in Bihar. All-India reform movements touched Bihar only lightly. On the contrary, the consciousness of caste became strengthened.

The introduction of railways brought economic stability to some parts of Bihar ; specially to the district of Saran, from which in one year, 10% of the population moved away to earn its living. The exodus of such a huge section of the population, instead of dismembering the joint-family system, actually reinforced it.

**T**HE social history of Bihar in the second half of the 19th century still remains largely unexplored, although a variety of materials is available in abundance. In the present

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paper an attempt has been made to highlight some of the problems that confront a student in relation to the above subject.

An undeniable fact of Bihar's social life was the 'growth' of literacy at the primary, secondary and collegiate levels. The term 'growth' is used here in a restricted sense, for the percentage was very low. Between 1888-89 and 1904-05, the percentage of primary education remained practically static, at about 2%. The two districts of Patna and Chaibasa were often in the vanguard, though for entirely different reasons. On account of historical reasons the former became the chief administrative town in Bihar and so contained more literate persons than any other district. Chaibasa, besides bordering on Bengal where education was more widespread than in Bihar, had an influx of Christian missionaries who, in their attempt to spread the Christian religion, also supplemented the meagre official efforts of propagating literacy among the tribals. In the year 1891-92, between 3 and 5% of the population was literate in Chaibasa. The Patna district had this figure during the year 1889-90. But other districts were far behind, and the figure for Bihar as a whole in 1904-05 was about 2%. Thus education, an important aspect of social change, was not playing the role it ought to have been owing to governmental policy as well as popular apathy.

Secondary and collegiate education was in no better shape, although Zila schools had been organized in practically all the district headquarters. These schools acted as beacons of new education. Practically all the Bihar leaders towards the end of the 19th century and the beginning of the 20th century received their education in these schools. In Patna and Chaibasa the figures of secondary and collegiate education remained constant around 0.25% between 1888-89 and 1904-05. All over Bihar the percentage slided back as the comparable figures in North Bihar were only around 0.05 per cent over the same period.

Female education began to look up only towards the end of the 19th century ; but here again the figures were extremely

meagre. The districts of Monghyr, Patna and Chaibasa were in the lead<sup>1</sup>.

The uneven and poor figures of literacy in Bihar indicate the uneven and imperceptible nature of social transformation that was overtaking it during this period.

In spite of stagnancy in percentage there was a definite increase in absolute numbers of literate persons in Bihar, which was a very important fact in the social life of this period. Even this limited growth in education ushered in social changes and unleashed movements of varying intensity.

However, this hesitant growth calls for explanation. Why is it that Bihar which came under the sway of the English along with Bengal did not keep up with the latter when it came to the question of Western education? A look at enrolment in the Patna College during its initial years shows that Bengali students outnumbered Biharis, which is inexplicable when it is noted that for persons with English education jobs were going abegging in Bihar. The government had to import Bengali teachers for the schools even though it was realized that an imperfect knowledge of the local language was a handicap in the efficient discharge of their duties.<sup>2</sup>

The absence of English-educated Biharis necessitated the import of Bengalis to fill up even petty clerical posts and jobs in the schools. In their wake also came Bengalis of independent professions, like lawyers and doctors. Many Bengalis also crossed over to areas of Bihar adjoining Bengal on account of deteriorating climatic conditions as a result of silting up of canals and consequent increase in malaria. Thus a sizeable number of educated Bengalis happened to live in Bihar and formed the biggest intellectual elite in the province. Bengali teachers were specially in a favourable position to mould the thinking of the impressionable young men who were under their care.

While talking of education, one is struck by the fact that in the sixties, seventies and probably in the eighties of the 19th century, the Muslims were more responsive to English education than the Hindus. All the five Bihari Fellows of the Calcutta

University in 1899 were Muslims. Moreover, Urdu had been included in the Calcutta University syllabus, but Hindi had yet to find a place.<sup>3</sup> Consequently, the Muslims had more of high governmental jobs in Bihar than their Bihari Hindu counterparts. In 1893, there were four Muslim Munsifs as compared to three Hindus, and between 1895-98 twelve Muslims were appointed to gazetted posts as compared to seven Hindus.<sup>4</sup> Practically all these Muslims belonged to high aristocratic and zemindar families. This is a phenomenon which controverts the oft-repeated theory that after 1857 Muslims shunned Western education and governmental jobs.

In view of the above it is obvious why in Bihar bitterness between Hindus and Muslims was absent as compared to Bengal where Hindus monopolized governmental jobs and also surpassed Muslims in matters of English education. So, at the turn of the present century, when political consciousness against the British began to manifest itself, the Hindus and the Muslims of Bihar were found united. The Muslims played an equally important role in the freedom movement with the Hindus.

The growth in the absolute number of literates in Bihar began to have its effect by the eighties of the 19th century. The demand for higher education and more share in governmental jobs increased in Bihar. Many Bihari youths went to Calcutta and some of them were also attracted towards the newly established University of Allahabad. Allahabad was then emerging as another important centre of Western education in North India. The Kayastha community under the leadership of Munshi Kali Prasad had opened the Kayastha Pathsala in 1873. In the nineties this was converted into a college and became the focal point of convergence of Bihari youths eager for English education, specially from its western parts because of easy accessibility. The more enterprising among Biharis began to cross the seas for studying in England. Two prominent names which stand out during this period are those of Maulana Mazharul Haque and Dr. Sachchidanand Sinha.

Among Bihari Hindus the lead in English education was taken by the Kayasthas, who were traditionally service-

holders or bureaucrats and did not entirely depend upon land for their livelihood. The Bhumihars and Rajputs who formed the bulk of the landed aristocracy and landholding peasantry followed suit. The Brahmins also took to English education, although their response varied because of local conditions. The demand for higher education led to the opening of a few more colleges by the end of the century by the public, who also began to take a more active interest in the spread of education. The Bihar National College in Patna and the Langat Singh College, Muzaffarpur, and others came into existence during this phase and are still thriving. These English schools and colleges helped the formation of the Bihari educated middle class. The leaders of Bihar public life at the beginning of the 20th century were the products of these schools and colleges.

However, in Bihar, as compared to the neighbouring province of Bengal, public enthusiasm for English education was still lacking. It is difficult to explain this situation because Bihar as a whole was hardly economically better off in order to miss the chance of sharing in governmental jobs. Actually, the clamour for governmental jobs was made a plank for the movement of separation of Bihar from Bengal, because Biharis were supposed to lose to the Bengalis in competition as a result of poor grounding in English education. A separate Bihar would have meant greater security of governmental jobs and more opportunity to the lawyers—the most numerous class which had been brought into existence as a result of English education in the last few decades. (It is interesting to note that there was only a single Bihari medical graduate in 1896 and no Bihari engineer at all. Hence, there was no formation of a professional middle class. But agitation for opening professional institutions began and a medical and an engineering school were opened.)

The English-educated Bihari middle class became the most vocal element in society. A look at its composition explains its motivations. It was wholly upper caste and predominantly upper class. The scions of the landed aristocracy or the Kayastha community contributed to its numbers. It now spear-headed the revolt against conservatism in religious

beliefs and social practices. Two of its leaders, Shri Deep Narain Singh married a Bengali lady and Dr. Sachchidanand Sinha took as his wife a child widow of the Punjab. Dr. Sachchidanand Sinha flouted the taboo against sea-voyage and refused to recant in spite of social ostracism by his fellow caste-men.

Thus the outcry against social prejudices began. Educated persons among both Hindus and Muslims began to raise their voice against ritualism, evils of the dowry system and unnecessary pomp. Some of them also supported widow remarriage. Several local associations were formed by enthusiastic young men. Mention may be made of the Muzaffarpur Dharma Sabha which brought out two magazines to preach against the dowry system and other social evils.<sup>5</sup> But in comparison to Bengal these movements were comparatively weak. Even All-India reform movements like the Arya Samaj and the Theosophical Society failed to have any significant impact on the middle class, although their branches in Bihar were established soon after they were founded.<sup>6</sup>

One would think that the Brahmo Samaj, which had originated in the contiguous territory of Bengal, would have some worthwhile impact in Bihar, specially in view of the large number of Bengali Brahmos who had settled down in Bihar. Many of them were employed as teachers in schools and colleges and had thus ample opportunity of projecting their ideals on the young Bihari minds. As a matter of fact, the reaction in Bihar was curious. All the important reform movements stood against the caste system. Caste became the burning topic of the day. Caste consciousness began to develop. Several caste organizations came into existence to look after 'caste interests'. This is the origin of the present-day caste consciousness in Bihar. Initially, these caste organizations played a positive and progressive role by exhorting their caste-men to take up English education, to give up the dowry system and other social evils. They also succeeded in breaking down intra-caste barriers to some extent. But the net result was that caste stratifications became more pronounced. Thus while attempts were made to destroy the caste system, it

became actually reinforced. This was also true of the economically well-off lower castes, specially those who were engaged in trade. They adopted the new ideologies similar to that of the Arya Samaj because it promised them a social status commensurate with their economic position. Some of their social disabilities in respect of joint meals with upper caste people were lessened. Intra-caste mobility among them was visible. But they too were unwilling to lose their caste identities. Their new caste consciousness was reflected in the setting up of caste organizations.

Together with the consciousness of caste, the consciousness of being either Hindu or Muslim made a faint appearance. Violence occasionally broke out and communal polarization could be detected in political life.<sup>7</sup> But, on the whole, Hindu-Muslim unity was preached by leaders of both the communities.

We have dealt above mainly with the influence of new education on social transformation in the second half of the 19th century. There were other factors also, though they were less conspicuous at first glance. The social effect of the introduction of railways has yet to be studied and properly assessed. In some parts of Bihar its introduction proved to be a great stabilizing factor in society.

The spread of railways was the harbinger of increased mobility, and it was evident in population displacements. It became easier for sections of Biharis to go out to work as labourers in the tea plantations of Assam or jute mills of Bengal or the mines of Chotanagpur. In North Bihar, specially in the district of Chapra (Saran), there was a great pressure on land because of the decline of the traditional saltpetre industry, which had formerly supported a large number of labourers. No alternative employment had become available. The railways siphoned off the surplus labour of the district to Assam, Bengal, Chotanagpur and other places where jobs were in plenty. Similarly, it helped a large number of persons to emigrate to Burma, the West Indies and Mauritius etc. Thus a big fraction of the population could now cross long distances for a short

while or for long periods. In certain districts of Bihar, a sizeable sector of the population earned its living in this manner. These job-opportunities, following in the wake of railways, brought economic stability in some places, specially in the district of Chapra where, in 1901, 10% of the population had gone out to earn their livelihood.<sup>8</sup> A complete economic breakdown of the old society was incidentally thus prevented.

The emigration of labour which, apart from being seasonal, was also for long stretches of time, had important consequences on the family structure. It strengthened the joint family system, because the labourer did not always take away his wife and children, and needed somebody to look after them. Naturally his choice was on the joint family, which instead of disintegrating because of his absence, became stronger. Another consequence was that the labourer retained his bonds in the village and was not lost to his original society. He always returned to its fold. The emigrant labourer was unable to strike roots in his new work-place. The Bihari labourer thus failed to be converted into the proletariat, the antithesis of the capitalist class, as envisaged by Karl Marx.

The joint family thrived on traditionalism and social conservatism, and in spite of the efforts of a section of the upper classes, it had a strong tendency to fossilize itself. At the moment, without a detailed study it would be hazardous to guess as to what changes resulted in attitude, norms and other habits of the labourers as a consequence of the contact with the outside world. However, in Saran, infant marriage was much less common and the growth of population was less than in other parts of Bihar. Similarly, the railways also helped to soften the rigours of the caste system, because journey in a railway compartment naturally meant the company of passengers of various castes, who were compelled to drink water from a common well or a common tap. But in essence, caste rigidity was not modified, there was no inter-caste mobility. In cities, some erosion of caste privileges and of disabilities took place ; but in villages the situation hardly changed.

The growth of literacy had led to the rise of the Press, both English and vernacular, which also helped to accelerate the

pace of social reform and national consciousness. Though the first daily newspaper was not published till the first decade of the 20th century, yet periodicals both in English and vernacular were printed and various pamphlets were in circulation from time to time. These journals often ceased publication after a short time. The role of journals in social history has yet to be fully evaluated by a full-scale study.

In North Bihar, the English indigo-planters formed a distinct social class by themselves. Living in an alien land, where the mass of humanity surrounding them was considered to be merely an object of exploitation and inferior in all respects, they hardly made any effort to mingle with them. They were like islands of Europeans living in far-off villages and with occasional exceptions they tenaciously tried to keep up their European identity. The miseries of the ryots were reflected in a number of folk-songs.

Thus, in the second half of the 19th century, the most important social change could be said to be the formation of the English-educated middle class, which acquired vested interests in governmental services and the legal profession and became irritated by social taboos. This educated class had not yet entered into either business or industry, nor had they taken enthusiastically to the medical or engineering professions. The reason was that this middle class still retained its ties with the villages through zemindaris or land-holdings and could always turn to them for sustenance. So it showed practically no interest in commerce or industry, and the Bihari capitalist class did not emerge, for the estrangement between villages and towns was not noticeable. It also explains the virtual absence of urbanization. No new city of commercial or industrial importance grew in Bihar, excluding Chotanagpur. The traditional crafts had decayed with the advent of machine-made goods and so had also decayed the cities which formerly owed their prosperity to them. Some of the old cities continued as mere administrative centres or railway junctions, and failed to have a noticeable impact on social life.

In a nutshell, it would seem proper that before definite

lines are laid down regarding the social life of Bihar in the second half of the 19th century, it is necessary to study small areas intensively, say, at the district level. Then only a proper assessment can be made. But one thing is certain ; there were regional imbalances. Ripples of change had begun to appear on the surface. It would be wrong to describe society as stagnant, just as it would be also wrong to describe it as dynamic. But the ground was prepared for social changes which were in evidence in it in the beginning of the 20th century.

In the foregoing account, we have left out the Chotanagpur region. The social life of this region followed an entirely different course because of the majority of tribal population and difficulties of communication. But the extension of British rule, with new concepts of law and administration, brought the tribals out of their insularity. The various Christian missions carried to them new education. Hence, in the period under review, some of regions compare favourably with other advanced areas of Bihar in respect of education. Again, the opening of mines in this area brought in a horde of persons, European as well as Indian. Their impact shattered the old equilibrium. Tensions developed, and throughout our period restlessness manifested itself in one form or another.<sup>10</sup>

(The author had fruitful discussions with Dr. K. K. Datta, Dr. B. B. Mazumdar, Dr. R. S. Sharma, Dr. Rameswar Prasad and Shri Satyanarayan Prasad while preparing the above paper. He takes this opportunity of expressing his deep gratitude to them.)

#### REFErences

1. All these figures regarding education have been compiled from the Reports of The Director of Public Instruction, Bengal, for the respective years.
2. *A History of the Patna College*, Patna, 1963.
3. V. C. P. Choudhuri, *The Making of Modern Bihar*, Patna, p. 64.
4. *Ibid.*, 69, 72.

\*\*\*\* Bihar was an important centre of anti-British Wahabi movement—a legacy from pre-1857 days. The Muslim peasantry

and small traders were greatly influenced by it. The movement had assumed political overtones but had a social aspect as well. It insisted on puritanical living and forbade unnecessary pomp. It was against the English education. It greatly helped the growth of Urdu prose.—Q. Ahmad, *Wahabi Movement*, Calcutta, 1967.

5. Bihar National Improvement Association of Bhagalpur was another example. Similar associations came into being at Bankipur and Purnea.
6. The first branch of the Arya Samaj seems to have been established in 1878.
7. In the district of Saran under the influence of Gorakshini Sabha during 1893-95 in some villages the Muslims were debarred from drawing water from common wells. *Bengal District Gazetteer, Saran*, Calcutta, 1908, pp. 39-40.
8. Ibid., p. 34.
9. Ibid.
10. Suresh Singh, *Dust Storm and Hanging Mist*, Calcutta, 1966.

# STUDYING STEREOTYPES CROSS-CULTURALLY

GOPAL SHARAN SINHA

MAHENDRA NARAIN KARNA

( Received on 17 October 1966 )

**Abstract.** This study involving 145 Nepali students belonging to and living in Nepal was undertaken as a part of tension study. A check list containing 70 traits was used for exploring the stereotypes of eight national groups belonging to America, Burma, China, England, India, Nepal, Pakistan and Russia. When the stereotypes of Nepali students were compared with those held by Indian students, a considerable similarity was discerned between the Nepali and Indian students in regard to the content of stereotypes of the American, Russian, Nepali, Indian, and Pakistani. The eight national groups were ranked also on the basis of degree of familiarity, preference for association and number of desirable traits assigned. The *rho* coefficients obtained were significant beyond .01 level of confidence.

Of the many methods used in studies of stereotypes, the check list method popularized and advocated by Katz and Braly<sup>1</sup> is the most widely used one. Eysenck and Crown<sup>2</sup>, however, have severely criticized this technique primarily on one account. To them, this technique requires the subjects to furnish the typical traits of particular groups in which they themselves may not believe, and thus they are asked to perform an 'impossible task' just to entertain the 'professor's request'. Similarly, Gilbert's<sup>3</sup> respondents could not list the objectives merely because they have no faith in stereotypes. Apparently the aforesaid arguments appear convincing and logical. But

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from several studies of stereotypes using the check list method, it is abundantly clear that even the so-called non-believers in stereotypes characterize different groups in a typical manner, so much so that some typical traits are selected for one group and few others for another group with marked uniformity. Further, even if it is hypothetically accepted that the content of the check list introduces bias, it should not be rejected outright for the following reasons : Firstly, the extent to which the check list is likely to influence the stereotypes has not been explored, which of course needs to be investigated urgently. Secondly, check list bias can be reduced to the minimum by using the same check list or closely similar check lists, as far as possible ; thirdly, some instructional provision enabling the subject to add any number of items or traits to the original check list can be made, and lastly, the check list method seems a tool *par excellence* for comparative studies, specially in the field of stereotypes. This viewpoint has been well expressed by Prothro<sup>4</sup> who contends that, 'Even if the point of view presented by Eysenck and Crown were correct, studies of the culturally determined picture (which students know but disbelieve) would be useful. Changes of the picture in time, consistency of picture in different countries, and the relationship of the picture to social tensions would still be important to know.' Buchanan<sup>5</sup> also found the check list method 'more useful in comparing stereotypes held among different groups of describers than in exploring the content of stereotypes.' For these reasons, the present study, which attempts to compare the stereotypes held among Nepali and Indian students towards the eight national groups, has preferred the check list method.

### *Problem*

The problem of the present study was (i) to explore the stereotypes of the Nepali students towards eight national groups and compare them with the stereotypes of Indian students investigated exactly in a similar manner in the year 1963 by the same author,<sup>6</sup> (ii) to find out the relationship between stereotypes and preference for association with the

members of different nations, (iii) to investigate the relationship between stereotypes and degree of familiarity with members of different nations and (iv) to investigate relationship between familiarity and association with members of different nations.

### *Method*

**Subject:** In the selection of 145 students who constituted the sample of the present study, accidental sampling technique was used<sup>7</sup>. Of the 145 students, 65 were school students and 80 college students of Adarsha Valika Vidyalay and Morang College, Biratnagar, Eastern Nepal, respectively. All the subjects were original residents and citizens of Nepal.

**Questionnaire:** The questionnaire containing the personal information sheet, the check list and the device to measure the preference for association and familiarity with different nations was divided into four parts. In the personal information sheet, personal information like age, sex, etc. of the subjects were sought for ; but in order to make the subjects feel confident of anonymity no information which might reveal the personal identity of the subjects was asked for. The check list, the details of preparation of which are given elsewhere<sup>8</sup>, contained 70 traits arranged in alphabetical order. The original list was in English, but after pilot-study Nepali synonyms were incorporated in the list. It consisted of Desirable, Neutral, and Undesirable traits.

**Procedure:** The questionnaire was administered individually by the second author. After furnishing the information asked for in the personal information sheet each subject was instructed to select five typical traits from the check list for each national group which the subject thought characterized that group best. In order to make the check list exhaustive, the subjects were allowed to add any number of traits in the check list and in their selections also. Besides, traits listed in the check list were rated on a three-points scale of desirability. Ranking method was used for measuring preference for association and degree of familiarity with the members of eight nations under study.

## Results and discussion

The ten characteristics most frequently attributed by the Nepali and Indian students to eight national groups, namely, the American, Burmese, Chinese, English, Indian, Nepali, Pakistani, and Russian are presented in Table 1.

TABLE 1

*Ten characteristics most frequently assigned by the Nepali and Indian students presented in rank order*

Nepali students	Indian students*	Percentage of common traits
A M E R I C A N		
Active	Capitalist-minded	
Progressive	Active	
Scientific-minded	Scientific-minded	
Adventurous	Cultured	
Hard working	Industrious	60%
Honest	Democratic	
Cultured	Dutiful	
Brave	Intelligent	
Practical	Progressive	
Democratic	Adventurous	
B U R M E S E		
Simple	Religious	
Active	Peace-loving	
Greedy	Cultured	
Artistic	Art-loving	
Hard working	Faithful	20%
Selfish	Backward	
Dull	Honest	
Brave	Narrow-minded	
Proud	Brave	
Nationalistic	Co-operative	
Backward		
Cruel		

\* Data taken from the study by the same author entitled : 'A study of national stereotypes', *Indian Journal of Social Work*, April, 1966.

Nepali students	Indian students	Percentage of common traits
<b>C H I N E S E</b>		
War-monger	Aggressive	
Artistic	War-monger	
Hard working	Dishonest	
Cruel	Cruel	
Active	Jealous	30%
Proud	Quarrelsome	
Brave	Greedy	
Cheat	Treacherous	
Cunning	Blunt	
Greedy	Rude	
<b>E N G L I S H</b>		
Active	Active	
Hard working	Industrious	
Adventurous	Disciplined	
Cultured	Adventurous	
Intelligent	Patriotic	40%
Honest	Intelligent	
Brave	Bold	
Friendly	Literary	
Pleasure-loving	Clever	
Scientific-minded	Honest	
<b>I N D I A N</b>		
Peace-loving	Peace-loving	
Religious	Religious	
Active	Patriotic	
Kind	Lazy	
Friendly	Cultured	50%
Honest	Honest	
Cultured	Democratic	
Brave	Hospitable	
Adventurous	Idealist	
Lazy	Co-operative	

## Nepali students

## Indian students

Percentage of  
common traits

## N E P A L I

Brave	Brave	
Honest	Honest	
Active	Dutiful	
Hard working	Obedient	
Religious	Bold	50%
Backward	Backward	
Faithful	Dull	
Kind	Faithful	
Adventurous	Blunt	
Simple	Religious	
Friendly		

## P A K I S T A N I

Cruel	Dishonest	
Hot-tempered	Jealous	
Greedy	Dangerous	
Proud	Cruel	
War-monger	Ungrateful	50%
Selfish	Cunning	
Cunning	War-monger	
Cheat	Greedy	
Active	Rude	
Treacherous	Treacherous	

## R U S S I A N

Scientific-minded	Scientific-minded	
Active	Progressive	
Adventurous	Intelligent	
Hard working	Adventurous	
Intelligent	Ambitious	
Progressive	Active	60%
Brave	Power-loving	
Peace-loving	Industrious	
Practical	Peace-loving	
Cultured	Revolutionary	

Tie indicates same rank

Six out of ten characteristics assigned to Americans and Russians are attributed by both Nepali and Indian students. This clearly indicates that the American and Russian image, irrespective of their affiliation to two distinct political systems and ideologies, is increasingly becoming universal. Besides, four of the six traits, namely, Active, Progressive, Scientific-minded and Adventurous, actually seem to refer to some of the important conditions for any scientific achievement. Needless to point out that in recent years Americans and Russians have made extraordinary achievements in the scientific field, and their names are often repeated in this context in the world press. Surprisingly enough, no undesirable traits out of ten, save and except 'capitalist-minded' attributed to American by Indian subject only, has been assigned to the American and Russian. As is evident from Table 2, more desirable traits, which of course indicate a favourable disposition, have been ascribed to Americans and Russians.

Towards the English, the Indian and Nepali subjects are favourably disposed ; but the degree of similarity in their stereotypes is somewhat low. The Indian and Nepali subjects think of the English as Active, Honest, Adventurous and Intelligent, all being desirable traits. It is interesting to note that in spite of the fact India was ruled by the English for nearly two hundred years, the Indian subjects in comparison to the Nepali have attributed a larger number of desirable traits to the English.

The stereotypes of the Nepali held by themselves are very much similar to those held by the Indian subjects. The two principal common elements of Nepali stereotypes are that the Nepali has been characterized as Brave and Honest. It seems relevant to point out that an average Indian identifies the Nepali with the Gurkha who form an important division of the Indian Army and have often been cited for chivalrous acts since long. Similarly, stories and sayings depicting the Nepali as honest are very popular in Indian life. Besides, Nepal is closely related to India through culture, religion and language since time immemorial. Nepali students have generally attributed

desirable traits to Nepalis, which of course marks a tendency to perceive one's own group favourably.

Nine out of ten traits most frequently attributed to the Pakistani and Indian by the Nepali subjects are undesirable and desirable traits respectively. Obviously, the Nepali subjects too, like the Indian, have an unfavourable image of the Pakistani, while they have a favourable image of the Indian. In order to explain this contrasting phenomenon the following suggestions can be made for due consideration. Firstly, the constitutional provision to elect a Muslim only for the post of President of Pakistan reduces the Hindus of Pakistan who are next to Muslims only in population, to a second-class citizenship. In contrast to it, Nepal is a Hindu state having a Hindu monarch and a Hindu-dominated population. Secondly, Pakistan, for want of diplomatic and other relations with Nepal, lacks the machinery to present a picture favourable to Pakistan. Consequently, such news as Hindus being evicted from and terrorized in Pakistan are readily accepted by Nepali people also. Thirdly, despite the fact that India is a secular republic, it has the largest Hindu population in the world and shares a common old culture, religion, history and tradition with Nepal.

There is least agreement between the Indian and Nepali students in assigning traits to the Burmese, although geographically Burma is close to both. This equally applies to the case of Chinese stereotypes, where the Nepali students agree with the Indian students in the assignment of three traits : War-monger, Cruel and Greedy, all being undesirable ones. Nepali students, unlike Indian students who since the Chinese aggression have become extremely unfavourable to the Chinese, have more or less an ambivalent attitude towards the Chinese. Due to its geographical location, Nepal is like a buffer state between China and India, the two major powers of Asia. Owing to this geo-political consideration, Nepal in her own interest needs to adopt a neutral policy which she professes to pursue in theory and practice as well. In fact, the population of Nepal is, as reported in an interview of the elites of

Biratnagar, an important commercial complex, broadly divided into three opinion-camps ; (i) pro-Indian, (ii) pro-Chinese and (iii) extremely nationalistic.

TABLE 2

*Average rank position on the basis of familiarity and preference for association along with the percentage of desirable traits attributed to eight national groups*

	Familiarity Rank position	Association Rank position	Percentage of desirable traits assigned
Nepali	1.48	1.80	83.17
Indian	2.40	3.14	66.88
American	4.06	3.57	81.24
Russian	5.88	4.80	72.55
English	4.99	4.80	60.78
Chinese	5.96	5.84	51.17
Pakistani	6.40	6.76	39.03
Burmese	6.40	6.92	50.34

Assignment of first rank position to the Nepali by Nepali students is obvious from Table 2, and to a great extent natural also. In order to identify one's own group, one is likely to prefer to associate more with the members of the in-group. Similarly, the perception of an in-group in most cases is over-rated and this seems to have operated in the case of Nepali students also. The Indian ranks second in respect of familiarity and association ; yet it could be given only the fourth position on the basis of desirable traits assigned. In comparison with the other national groups under study, the Pakistani and Burmese are least known, least preferred for association, and have been attributed the minimum number of desirable traits.

TABLE 3

*Rho-correlations obtained*

Between	Value
Association and Familiarity	.98*
Familiarity and Stereotypes	.87*
Stereotypes and Association	.88*

In order to see whether the apparent correlations between the rankings of the eight national groups on the basis of familiarity, preference for association and number of desirable traits assigned, is statistically significant or not, the correlations were computed. The three coefficients obtained and presented in Table 3 are statistically significant beyond .01 level of significance. This clearly shows that the phenomena under study are highly and positively correlated. Further, it makes clear that the attitude measured in terms of preference for association is very much correlated with the nature of stereotypes. Either one determines the other or both are partly the co-effect of a common determinant. However, from the present study nothing conclusive regarding the nature of relationship can be said. Further researches, therefore, are deemed necessary.

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\* Significant beyond .01 level of confidence.

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# SOME EVOLUTIONARY ASPECTS IN THE DENTAL MORPHOLOGY OF BENGALEE SKULLS

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( *Received on 12th December* )

**Abstract.** Some evolutionary aspects in molar cusps and dental roots have been studied in 99 adult crania and 87 adult mandibles collected from Contai, District Midnapur, West Bengal.

The reduction in the number of dental cusps and root, and simplification in cusp pattern are quite obvious in the present sample along with sexual as well as bilateral variations. Furthermore, the occurrence of high percentages of single-rooted maxillary first premolars and considerable reduction of number of roots in maxillary second and third molars requires special mention.

The above-mentioned findings when compared with other racial stocks stand in conformity with the Whites and differ from the Mongoloids.

THE evolutionary changes are perceived in dental characteristics as the process aiming generally towards simplification and reduction. It is apparent from earlier studies as shown by Dahlberg (1945, 1963) and others that these changes are not taking place at the same rate in the various geographical and racial groups. Studies on dental roots are rare when compared with studies on other aspects of dentition. In the present study, an attempt has been made to show some of the evolutionary aspects in molar cusps as well as in dental roots among the Bengalee population. Studies on shovel-shaped incisors and canines have not been possible due to small data, as most of them are missing from

the sockets. The incidence of congenital missing teeth and dental weight of the same population have been the subject of earlier studies (Banerjee 1963, 1964).

The present data consist of 99 adult crania (male - 62, female - 37) and 87 adult mandibles (male - 61, female - 26) collected from Contai, District Midnapur, West Bengal. Sex determination of the crania was done after Hrdlicka (1957), Giles and Elliot (1963). After using proper method of cleaning and preservation, characteristics of the occlusal surface of molar teeth were studied first. Then the skulls and the mandibles were soaked in water containing caustic potash for about 24 hours so as to make them convenient for the extraction of teeth. The teeth were extracted with dental forceps. The characteristics of the root of the teeth were studied directly from the teeth and when the teeth were missing, they were studied from the impressions of the sockets.

#### *Characteristics of the occlusal surface of molar teeth*

Both in the maxillary and mandibular molars, the occlusal fissure pattern is simple, the individual cusp is not broken by subsidiary fissures. The number and pattern of occlusal cusps observed in the present collection have been given in tables 1 and 2 respectively. Variations between left and right sides have been observed in the present data ; but to make them comparable with earlier studies an average of each character has been given in tables 1 - 4.

In the maxilla (Table 1) almost all the first molars are 4-cuspid in both the sexes (male - 98.8%, female - 94.3%). 4-given in the table indicates a reduction in the size of the distolingual cusp as described by Dahlberg (1945). 4-cuspid second molars occur more in males (70.2%) than in females (38.0%) ; the latter showing greater tendency to the reduction of the size of the distolingual cusp (male - 10.9%, female - 32.5%) and also to the complete reduction of it (male - 18.9%, female - 29.5%). Third molars are mainly 3-cuspid in both the sexes. This trend of reduction of cusp-number in the case of second and third molars appears to exist more on the right side than on the left among both sexes.

TABLE I  
*Percentile occurrence of cusp numbers in molars*

Cusp nos.	Maxilla						Mandible					
	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
4 97.5 (98.8)	100.0	72.7 (70.2)	67.7	33.3 (28.4)	23.5	96.2 (94.3)	92.3	52.4 (38.0)	23.5	33.3 (22.9)	12.5	
4— 2.5 (1.2)	×	12.1 (10.9)	9.7	8.3 (13.0)	17.7	×	(1.9)	3.8	23.8 (32.5)	41.2	11.1 (18.0)	25.0
3 × ×	15.2 (18.9)	22.6	58.4 (58.6)	58.8	3.8	(3.8)	3.8	23.8 (29.5)	35.3	55.6 (59.1)	62.5	
5 68.0 (66.2)	64.3	×	×	50.0 (35.3)	20.8	80.0 (81.7)	83.3	×	(2.4)	4.8	42.9 (34.0)	25.0
4 32.0 (33.8)	35.7	92.0 (94.2)	96.3	45.0 (53.8)	62.5	20.0 (18.3)	16.7	100.0 (97.6)	95.2	42.9 (55.8)	68.8	
3 × ×	8.0 (5.8)	3.7	5.0 (10.9)	16.7	×	×	×	×	×	14.2 (10.2)	6.2	

Figures in parenthesis indicate the averages of Lt. and Rt. sides.

TABLE 2  
*Percentile occurrence of cusp pattern on molars*

Cusp nos.	M a l e						F e m a l e								
	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Lt.	Rt.	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Lt.	Rt.	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Lt.	Rt.
5y	59.1 (62.1)	65.2	x	x	x	5.6 (2.8)	x	75.0 (73.2)	71.4	x	(2.5)	5.0	25.0 (12.5)	x	
5+	18.2 (15.6)	13.0	x	x	x	50.0 (38.9)	27.8	6.3 (10.4)	14.4	x	x	x	25.0 (25.9)	26.7	
4y	18.2 (15.6)	13.0	13.0 (14.5)	16.0	11.1 (13.9)	16.7	12.5 (9.8)	7.1	29.4 (27.2)	25.0	25.0 (22.5)	20.0	25.0 (22.5)	20.0	
4+	4.6 (6.7)	8.7	87.0 (85.5)	84.0	33.3 (44.4)	55.5	6.3 (6.7)	7.1	70.6 (70.3)	70.0	25.0 (39.1)	53.3	25.0 (39.1)	53.3	

Figures in parenthesis indicate the averages of Lt. and Rt. sides

TABLE 3

*Percentile occurrence of root number in premolars*

Root number	Maxilla							
	Male				Female			
	P <sub>1</sub>		P <sub>2</sub>		P <sub>1</sub>		P <sub>2</sub>	
Root number	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.	Lt.	Rt.
1	42.3	45.0	85.3	83.3	61.1	70.3	88.8	86.5
	(43.7)		(84.3)		(65.7)		(87.7)	
1 (with fissure)	13.6	11.7	9.8	8.3	13.9	13.5	5.6	8.1
	(12.6)		(9.1)		(13.7)		(6.8)	
2	44.1	43.3	4.9	8.3	25.0	16.2	5.6	5.4
	(43.7)		(6.6)		(20.6)		(5.5)	
Mandible								
1	75.4	73.7	96.5	96.5	73.1	73.1	96.2	96.2
	(74.5)		(96.5)		(73.1)		(96.2)	
1 (with fissure)	22.8	24.6	3.5	3.5	23.1	23.1	x	x
	(23.7)		(3.5)		(23.1)		x	
2	1.8	1.8	x	x	3.8	3.8	3.8	3.8
	(1.8)		x		(3.8)		(3.8)	

Figures in parenthesis indicate averages of Lt. and Rt. sides

TABLE 4

Percentile occurrence of root numbers in molars.

## Maxilla

Root number	Male						Female					
	M <sub>1</sub>	M <sub>2</sub>	Lt.	Rt.	M <sub>1</sub>	M <sub>2</sub>	Lt.	Rt.	M <sub>1</sub>	M <sub>2</sub>	Lt.	Rt.
1 with groove	1.7 (1.7)	1.8 (11.8)	12.5, (11.8)	11.1 (28.8)	27.5 (25.6)	29.0 (26.3)	×	×	27.8 (10.8)	28.6 (14.1)	40.0 (14.3)	23.8 (29.0)
2	5.2 (4.4)	3.5 (20.9)	21.4 (20.9)	20.4 (25.6)	25.0 (46.1)	26.3 (44.7)	10.8 (89.2)	10.8 (89.2)	13.9 (57.7)	14.3 (57.1)	20.0 (28.0)	38.1 (28.3)
3 (normal)	93.1 (93.9)	94.7 (67.3)	66.1 (67.3)	68.5 (67.3)	47.5 (46.1)	44.7 (46.1)	89.2 (89.2)	89.2 (89.2)	58.3 (57.7)	57.1 (57.7)	28.0 (28.3)	28.6 (28.3)
4	×	×	×	×	×	×	×	×	×	×	12.0 (11.2)	9.5 (9.5)
1	1.7 (0.9)	×	10.9 (10.0)	9.1 (10.0)	12.8 (13.9)	14.9 (13.9)	×	×	20.0 (17.7)	15.4 (17.7)	10.0 (9.5)	9.1 (9.5)
2 (normal)	89.5 (89.5)	89.5 (86.4)	85.5 (86.4)	87.3 (86.4)	72.3 (76.6)	80.9 (76.6)	92.3 (92.3)	92.3 (92.3)	80.0 (82.3)	84.6 (82.3)	85.0 (85.7)	86.4 (85.7)
2 (tip bifurcated)	5.3 (6.1)	7.0 (2.7)	3.6 (2.7)	1.8 (1.0)	2.1 (1.0)	1.8 (1.0)	7.7 (7.7)	7.7 (7.7)	×	×	×	×
3	3.5 (3.5)	3.5 (0.9)	1.8 (0.9)	12.8 (8.5)	4.2 (8.5)	4.2 (8.5)	×	×	×	×	5.0 (4.8)	4.5 (4.8)

Figures in parenthesis indicate averages in Lt. and Rt. sides

Mandibular first molars are mainly 5-cuspid, females showing more of it (81.7%) than males (66.2%). Second and third molars possess 4 cusps in the majority in both the sexes, the percentages being 94.2 and 53.8 in males and 97.6 and 55.8 in females respectively. Bilateral asymmetry is more marked with third molars of both the sexes ; the right ones showing more reduction in cusp number.

It will be apparent from table 2 that  $Y_5$  form of cusp pattern occurs mostly on mandibular first molars, it being 62.1% and 73.2% in males and females respectively ; while the second and third molars are mostly cruciform (+4), the respective percentages being 85.5 and 44.4 in males and 70.3 and 39.1 in females. Third molars of both sexes also show a high percentage of +5 form (male - 38.9, female - 25.9).

### *Characteristics of root*

**Canine (C) :** Two left mandibular canines, one from each of the sexes, have been found to be implanted with two roots. Such abnormality however is not met with in the maxillary canines.

**Premolars (P<sub>1</sub>, P<sub>2</sub>) :** Table 3 shows that in males, single-rooted and double-rooted maxillary first premolars occur in equal percentages of 43.7 ; while females show more tendency towards reduction of root number, the percentages of single-rooted and double-rooted first premolars being 65.7 and 20.6 respectively. A number of cases (male - 12.6%, female - 13.7%) have been found where fissures of varying degrees are present in the root. Second premolars implanted with two roots occur almost in equal percentages among both the sexes (male - 6.6%, female - 5.5%).

In the mandibles of both the sexes occurrence of complete two-rooted premolars is very rare ; but first premolars with fissures are present in the frequencies of 23.7% and 23.1% among males and females respectively.

**Molars (M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub>) :** From table 4 it appears that the occurrence of extra root in the molar teeth is very rare ; but the reduction of root number from the usual ones is more

marked in the present sample. The trend of fusion of root is again more apparent in the maxillary second and third molars of both males ( $M_2$  - 32.7%,  $M_3$  - 53.9%) and females ( $M_2$  - 42.3%,  $M_3$  - 60.4%). Maxillary third molars in females and mandibular third molars in males appear to be the most variable, while first molars belonging to both the jaws of the two sexes appear to be least affected. A number of cases (male - 6.7%, female - 7.7%) however have been found in the mandibular first molars where the tips of anterior roots are bifurcated.

It is noted that in the maxillary molars, fusion takes place mostly in two ways : (i) fusion between anterior buccal and lingual roots (male - 47.6%, female - 65.2%) and (ii) fusion between two buccal roots (male - 38.1%, female - 30.4%). In the mandibular molars fusion always starts at the buccal side.

In the present collection, pyramidal reduction form of molar roots (Tratman 1950) has been found in a single mandibular first molar on the left side. This type of tooth is more common in the case of other molars (table 4). True taurodont tooth has not been found in the present collection excepting a left maxillary third molar of a male person which shows only a tendency to taurodontism.

### *Discussion*

It will be apparent from the above descriptions that the reduction of cusp number as well as simplification in cusp pattern are quite obvious in the present study. The reduction and the simplification however appear to show some bilateral variation as well as sexual variation. The maxillary second and third molars as well as mandibular third molars of the right side of both sexes show more reduction of cusp numbers than the left side. The females appear to show greater reduction in the number of cusps than their male counterparts. Sexual variation is observed in the case of mandibular first molars, males showing more reduction in cusp number than females. The maxillary second and third molars of females and the mandibular first molars of males thus appear to show more evolutionary sequences in

their cusp numbers. Goldstein's study (1932) however appears to show such progressive cusp numbers of the mandibular molars too in females. The simplification of cusp pattern (+ 4, + 5) also occurs more in males than in females, the latter showing simplification (+ 4, + 5 combined), more on the right than on the left.

Similar to the reduction of cusp number and simplification of the cusp pattern, the reduction in the number of dental roots may also be considered as one of the perceptible factors in dental evolution; but studies on this aspect appear to be limited. Dahlberg (1961) accounted for more environmental modification of the dental roots than the cusp numbers and cusp patterns because of the completion of development of the latter two before eruption. In the present sample, the occurrence of high percentages (male - 43.7%; female - 65.7%) of the single-rooted maxillary first premolars requires special mention, because of its nonconformity with the text-book description of these teeth which are described as mainly double-rooted (Gray, Cunningham 1951, Young 1964). Apart from the above phenomena a considerable number of cases have been found in the present sample where both the maxillary and mandibular premolars of the two sexes show fissures of varying degrees. How far the above phenomena may be considered as an intermediate step in the gradual transformation of double-rooted premolars to the single-rooted type and how far this is due to some inherent genetic and racial factors, can only be revealed by further study.

The bilateral asymmetry in the reduction of root number has also been observed in the maxillary premolars, the females showing more of it. The maxillary second and third molars too show considerable reduction in the number of roots among both sexes, the respective percentages (single-rooted and double-rooted combined) being 32.7 and 53.9 in males and 42.3 and 60.4 in females respectively.

The phenomena of reduction of root number in the maxillary first premolars, second and third molars which has been observed in considerable frequencies in the present sample however cannot be compared with other populations

because of paucity of such data. But so as far as the cusp numbers and patterns are concerned, the present sample shows a closer similarity with the American Whites in mandibular first and second molars and European Whites in mandibular third molars and differ from the Mongoloid groups (Dahlberg 1945, Chagula 1960). The present data also agree very well with the Indo-European group of Tratman (1950) in other dental characteristics and show much dissimilarity with the Mongoloid group, both living in Malay. Thus the ethnic history of the present Bengalee population calls for a non-Mongoloid origin, particularly wherefrom the present data were collected.

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# AGE AT MENARCHE OF KALITA GIRLS IN ASSAM

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*(Received on 5 December 1966)*

**Abstract.** The authors have compared the menarcheal age of some rural and urban populations in Assam with those of the populations of U. P., Bengal, Kerala and Maharashtra.

## *Introduction*

It has been reported by many workers that ages at menarche vary from population to population and that it is related to such factors as environment, nutrition and heredity.

Robertson (1895) made an investigation into the period of puberty in Hindu women. Curjel (1920) attempted a study on the reproductive life of Indian women. Since then, some work in this line has been done in different parts of India. In the context of the present study reference may be made to Sen's work (1953) among Bengali girls, Rakshit's work (1960) among Assamese girls and Dubey and Srivastava's work (1963) among women of Uttar Pradesh.

The present paper is based on a preliminary study of the age at menarche of 172 Kalita girls of Assam. The Kalita form a caste in the Hindu population of Assam. The data were collected by the first writer from schools in rural areas of the district of Kamrup. Besides that, data on three other castes, namely, Brahman (no. = 26), Vaishya (no. = 35) and

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Kaibartta (no. = 30) were also collected. All these have been included in the present study.

As has already been stated, the samples have been drawn from rural areas. All of them live under the same environmental condition and on almost similar diet.

Estimation of correct age at the time of menarche is the most important part of the collection of data. Proper care was taken to obtain the correct age of each of the girls under study. In most of the cases, the ages were derived from their horoscopes. On some occasions, the parents were contacted. Most of the girls could tell the exact date of menarche, firstly, because the event occurred recently as they are school-going girls, and, secondly, some socio-cultural rituals are observed on that occasion.

The present data have been compared with the data of Sen, Rakshit, and Dubey and Srivastava.

### *The Data*

Table 1 shows the distribution of the different castes of Assam according to menarcheal age. It appears from the table that the Kalita show the highest frequency at the 13th year (12.11 years). This is true in the case of the other three castes also. Very generally speaking, most of the women of the Kalita caste as well as of other castes included in the present study, had their first menstruation at the age ranging from 12 to 13 years.

TABLE 1

Age in years and months	Brahman No.	Kalita No.	Vaishya No.	Kaibartta No.	Pooled No.
11-11	6	15	2	1	24
12-11	14	101	17	17	149
13-11	6	51	10	11	78
14-11	0	5	6	1	12
	—	—	—	—	—
	26	172	35	30	263

In table 2 the statistical constants of the different castes on the basis of decimalized age of the individuals in years have been given.

TABLE 2

Groups	Number	Mean $\pm$ S. E.	S. D.	Variance
Brahman	26	12.51 $\pm$ 0.11	0.582	0.3387
Kalita	172	12.61 $\pm$ 0.14	0.570	0.3249
Vaishya	35	12.97 $\pm$ 0.12	0.707	0.4998
Kaibartta	30	12.89 $\pm$ 0.12	0.645	0.3315
Pooled	263	12.71 $\pm$ 0.13	0.681	0.4638

It appears from the table that the mean menarcheal age of the Kalita is  $12.61 \pm 0.14$  years. The Brahman mean ( $12.51 \pm 0.14$ ) closely resembles it. The Vaishya ( $12.97 \pm 0.12$ ) and the Kaibartta ( $12.89 \pm 0.12$ ) means are slightly higher than the Kalita mean. But the differences in this respect among the four castes do not appear to be significant. This is revealed by the results of the analysis of variance (table 3). The value of F lies between 2.68 and 2.60. Hence F is not significant at 5% level. In other words, there is no statistically significant difference in the mean menarcheal ages for these four castes, namely, Kalita, Brahman, Vaishya and Kaibartta. And as such these Assamese caste data can be pooled for the purpose of comparison with other populations. Rakshit also obtained a similar result.

TABLE 3

*Analysis of variance*

Source of variation	Degree of freedom	Sums of squares	Mean squares (variance)	Variance ratio
Among the means	3	9.84	3.28	x
Within the groups	259	431.94	1.67	1.96

## Comparison

The mean menarcheal age of the Assamese girls ( $12.71 \pm 0.13$ ) in the present study is higher than that obtained by Rakshit (12.39). Though the difference between the two appears to be slight, it is statistically significant, as is revealed by the value of  $t$  (Fisher), being 3.40 at 5% level. In this connexion it should be pointed out that Rakshit collected her data from the Jorhat Girls' High School and as such her data represent an urban sample, whereas the present data were collected from rural areas. Moreover, her sample includes the Muslim community also. The castes are also not the same as those in the present study.

TABLE 4

### Comparison of Means

	No.	Mean	Author
Assam : Pooled data	263	12.71	Present
Assam , ,	138	12.39	Rakshit
U. P. , ,	253	13.62	Dubey and Srivastava
Bengal : All castes	647	12.73	Sen
Kerala : Nayar	75	14.29	Sen
Maharashtra : Brahman	103	14.34	Rakshit

In table 4, the mean values of the various populations have been compared. The mean of the Assamese (12.71) almost agrees with that of the Bengalis (12.73). The other means, namely, of Uttar Pradesh (13.62), Kerala (14.29) and Maharashtra (14.34) are higher than that of the Assamese.

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# ANTHROPOMETRY OF THE KOLTAS OF JAUNSAR-BAWAR, U. P.

MALAY KUMAR BANERJEE

(Received on 28 August 1966)

**Abstract :** The purpose of this study is to present the anthropometric characteristics of Koltas, a low-caste people, inhabiting Jaunsar-Bawar.

## Introduction

JAUNSAR-Bawar is in the cis-Himalayan region located at the north-western corner of Uttar Pradesh. It lies between  $30^{\circ} 31'$  and  $30^{\circ} 3'30''$  N. lat., and  $77^{\circ} 45'$  and  $78^{\circ} 7'20''$  E. long.

The Koltas occupy the lowest place in the social hierarchy of Jaunsar-Bawar; and have been treated as agricultural labourers or untouchable serfs. They are also leather-workers and supplement their income by weaving, pottery-making and the skinning of animals. The total Kolta population in Jaunsar-Bawar is not more than one thousand. Exact figures, however, are not available. All the residents of the village of Chapnu are Koltas. Chapnu is a small village located in the southern portion of Jaunsar-Bawar and is situated at 4,500 feet above sea level. It has an area of 67.34 acres and a population of 111 persons. The age-wise population of the village is given in table 1.

TABLE 1

*Age-wise population in Chapnu (May 1965)*

Age-group	Individual		Total
	Male	Female	
0-17	25	22	47
18 and above	34	30	64

*The Data*

Anthropometric data on 50 adult males were collected by the author during May-June 1965 from the villages of Bhur 3, Korwa 8, Chapnu 20, Panasa 3, Samalta 3, Lohari 7 and Lakhamandal 6. The technique of measurement followed is that of Martin, excepting for the auricular height which was measured with Schultz's parallelometer. Table 2 presents mean, standard deviation and coefficient of variation with their respective standard errors for the 13 metric characters and 4 indices of Kolta males.

TABLE 2

*Statistical constants of direct measurements and indices with their respective standard errors*

Characters (mm.)	Range	Mean $\pm$ S. E.	S. D. $\pm$ S. E.	C. V. $\pm$ S. E.
Stature	1510 - 1768	1639.82 $\pm$ 8.04	56.86 $\pm$ 5.69	3.47 $\pm$ 0.35
Sitting height	765 - 922	845.98 $\pm$ 5.23	37.00 $\pm$ 3.70	4.37 $\pm$ 0.44
Head length	174 - 202	190.16 $\pm$ 0.77	5.48 $\pm$ 0.55	2.88 $\pm$ 0.29
Head breadth	127 - 150	139.58 $\pm$ 0.81	5.74 $\pm$ 0.57	4.11 $\pm$ 0.41
Auricular height	107 - 137	120.11 $\pm$ 0.80	5.68 $\pm$ 0.57	4.73 $\pm$ 0.47
Min. frontal breadth	95 - 110	102.38 $\pm$ 0.52	3.71 $\pm$ 0.37	3.62 $\pm$ 0.36
Bizygomatic breadth	120 - 139	130.80 $\pm$ 0.63	4.42 $\pm$ 0.44	3.38 $\pm$ 0.34
Bigonial breadth	85 - 113	101.10 $\pm$ 0.91	6.43 $\pm$ 0.64	6.36 $\pm$ 0.64
Upper facial height	64 - 84	71.12 $\pm$ 0.58	4.09 $\pm$ 0.41	5.75 $\pm$ 0.58
Total facial height	107 - 129	118.70 $\pm$ 0.77	5.42 $\pm$ 0.54	4.57 $\pm$ 0.46
Nasal height	38 - 59	52.38 $\pm$ 0.52	3.70 $\pm$ 0.37	7.06 $\pm$ 0.71
Nasal breadth	32 - 44	37.66 $\pm$ 0.38	2.66 $\pm$ 0.27	7.06 $\pm$ 0.71
Hor. circ. of head	513 - 574	541.98 $\pm$ 1.85	13.06 $\pm$ 1.31	2.41 $\pm$ 0.24
<b>I N D I C E S :</b>				
Cephalic	65 - 83	73.44 $\pm$ 0.44	3.14 $\pm$ 0.31	4.28 $\pm$ 0.43
Nasal	55 - 97	72.32 $\pm$ 1.11	7.87 $\pm$ 0.79	10.88 $\pm$ 1.09
Upper facial	47 - 62	54.44 $\pm$ 0.53	3.77 $\pm$ 0.38	6.93 $\pm$ 0.69
Total facial	80 - 105	90.87 $\pm$ 0.76	5.39 $\pm$ 0.54	5.93 $\pm$ 0.59

**Stature**

Among the Kolta, 'short' stature is found to occur in the highest frequency (26%). Next comes 'below medium' and 'medium' in equal percentages of 22. 'Above medium' (16%) and 'tall' (14%) also occur in fairly large numbers; the mean value of stature, being  $1639.82 \pm 8.04$  mm. with the range varying between 1768 mm. and 1510 mm., however, falls on the border line between 'below medium' and 'medium'. The classification frequencies of stature are given in table 3.

TABLE 3

*Stature*

Class	Range in mm.	Number	Percentage
Short	1500—1599	13	26
Below medium	1600—1639	11	22
Medium	1640—1669	11	22
Above medium	1670—1699	8	16
Tall	1700—1799	7	14

**Cephalic Index**

Dolichocephalic element (64%) predominates among the Koltas. Next to it comes hyperdolichocephaly (18%) and mesocephaly (16%). The percentage of brachycephaly is almost negligible (2%). The details are given in table 4.

TABLE 4

*Cephalic Index*

Class	Range	Number	Percentage
Hyperdolichocephal	Below 70.9	9	18
Dolichocephal	71.0—75.9	32	64
Mesocephal	76.0—80.9	8	16
Brachycephal	81.0—85.4	1	2

**Nasal Index**

The Koltas are characterized by mesorrhine (54%) to leptorrhine (40%) noses. Details are given in table 5.

TABLE 5

*Nasal Index*

Class	Range	Number	Percentage
Leptorrhine	55.0-69.9	20	40
Mesorrhine	70.0-84.9	27	54
Chamaerrhine	85.0-99.9	3	6

**Upper Facial Index**

Though the leptene type of face occurs predominantly (58%), a high percentage of mesene (38%) is also met with. The frequencies are given in table 6.

TABLE 6

*Upper Facial Index*

Class	Range	Number	Percentage
Euryene	43.0-47.9	2	4
Mesene	48.0-52.9	19	38
Leptene	53.0-56.9	16	32
Hyper-leptene	57.0 and above	13	26

**Total Facial Index**

Though in the majority, the face of the Kolta is long as suggested by the highest frequency of leptoprosopic type (64%), yet the frequency of medium type of face is also high, being present in 28% of the sample. The details are presented in table 7.

TABLE 7

## Total Facial Index

Class	Range	Number	Percentage
Hypereuryprosop	Below 78.9	×	×
Euryprosop	79.0-83.9	4	8
Mesoprosop	84.0-87.9	14	28
Leptoprosop	88.0-92.9	16	32
Hyperleptoprosop	93.0 and above	16	32

The only anthropometric data of the Kolta reported so far are those of Majumdar (1944) who measured them along with some 'other artisans.' However, there is no mention of the names of other artisans whom he included in the group 'Kolta and others'. In Jaunsar-Bawar there are some artisan castes, namely, Bajgirs or the Oadhs who are considered to be of higher social rank than the Koltas. Therefore, a comparison cannot be made between the present series and the findings of Majumdar.

### Summary

The Kolta are short to medium in stature, the mean stature being 1639.82 mm. Their head is dolichocephalic (64%). The nose is mesorrhine (54%) with a tendency towards leptorrhiny. The face of the Kolta is long as revealed by their upper facial and total facial indices.

The author expresses his gratefulness to Dr. D. K. Sen, Director, Anthropological Survey of India, for kindly providing him an opportunity to undertake an anthropometric survey of Uttar Pradesh.

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# THE a-d RIDGE COUNT OF RARHI BRAHMANS OF BENGAL RESIDING AT DELHI

P. K. CHATTOPADHYAY

P. DASH SHARMA

*(Received on 24 August 1966)*

**Abstract.** This is a study of the a-d ridge count of 164 subjects belonging to the Rarhi Brahman sub-caste of Bengal, residing in Delhi.

**D**URING an investigation for dermatoglyphical traits among the Bengalis residing in Delhi, we had the opportunity of collecting bilateral palmar prints of 164 Rarhi Brahmans. The palmar main lines and pattern frequencies in the different configurational areas and the a-b ridge count of the Rarhi Brahmans has been reported elsewhere (Chattopadhyay and Dash Sharma, 1966 a, b). The present paper deals with the a-d ridge count of the Rarhi Brahmans.

## *Material and method*

The data analysed in the present paper consists of bilateral palmar prints of 164 Rarhi Brahmans (103 male and 61 female). Care was taken to include in the study unrelated subjects only. Rarhi Brahmans form an endogamous subcaste, which has many exogamous *gotras* (clan-like organization).

The method followed in counting the ridges is that of Chattopadhyay (1966).

## *Results*

The mean a-d ridge count of the two sexes is given in table 1. It is evident from the table that the females have higher ridge count in both the palms than the males. The

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bimanual difference is not marked, right palm shows more ridges than the left in both the sexes; the males and females having 0.71 and 0.36 per cent more ridges in the right palm than the left respectively. The difference between the two sexes is not significant ( $t=0.80$   $0.5>p>0.4$  with 162 d.f.) which is in conformity with the findings of other workers (Chattopadhyay 1966; Seth and Seth 1966.)

The a-d ridge count of the Rarhi Brahmans along with some other populations of India is given in table 2. It is observed that the Rarhi Brahmans resemble the Maharashtrians; the males of the two populations are very close to each other. The Rarhi Brahmans and the Punjabis show more ridges in the right palm than in the left, while it is just the reverse in the case of Maharashtrians. The Rarhi Brahmans and the Punjabi females show higher ridge count value than the males in both the palms, while the Maharashtrian males show higher ridge count value than the females in both the palms.

In view of the fact that very few populations have been studied so far for this trait, it is too early to draw any conclusion regarding its utility as an ethnic criterion.

### *Summary*

1. The a-d ridge count is slightly higher in the right palm than the left in both the sexes of the Rarhi Brahmans.
2. The ridge count is higher in both the palms in females than in males.
3. The sex-difference is non-significant.
4. The Rarhi Brahmans resemble the Maharashtrians more closely than the Punjabis.

### *Acknowledgement*

Our thanks are due to Prof. P. C. Biswas and Dr. A. K. Mitra, Department of Anthropology, University of Delhi, for their helpful suggestions during the preparation of this paper.

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TABLE 1

*The Mean a-d ridge count of the Rarhi Brahmans*

Sex	Number	Mean a-d Ridge count $\pm$ S. E.			Total (Right+Left)	R/L Ratio
		Right	Left	Mean	Range	
Male	103	76.05 $\pm$ 1.05	75.51 $\pm$ 1.50	151.57 $\pm$ 2.89	91-228	100.71
Female	61	77.03 $\pm$ 1.95	76.75 $\pm$ 2.11	153.78 $\pm$ 3.96	94-221	100.36
Male and Female	164	76.42 $\pm$ 1.25	75.97 $\pm$ 1.23	152.39 $\pm$ 2.35	91-228	

TABLE 2

*The a-d ridge count in some of the populations of India*

Populations	Number	Mean a-d Ridge count			Mean + S. E.	Range
		Right	Left	Total (Right+Left)		
<b>RARHI BRAHMANS :</b>						
Male	103	76.05	75.51	151.57 $\pm$ 2.89	91-228	
Female	61	77.03	76.75	153.78 $\pm$ 3.96	94-221	
Male+Female	164	76.42	75.97	152.39 $\pm$ 2.35	91-228	
<b>MAHARASHTRIANS :</b>						
Male	73	74.11	75.83	149.94 $\pm$ 2.94	103-222	
Female	75	70.40	71.30	142.00 $\pm$ 2.84	91-202	
Male+Female	148	71.92	73.24	145.16 $\pm$ 2.14	91-222	
<b>PUNJABIS :</b>						
Male	66	68.17	67.50	135.67 $\pm$ 3.06	77-189	
Female	38	69.03	68.63	137.66 $\pm$ 4.35	88-195	
Male+Female	104	68.48	67.91	136.39 $\pm$ 2.53	77-195	

# ANTHROPOMETRY OF THE HO OF SERAIKELLA

GURU CHARAN GHOSH

(Received on 6 August 1966)

**Abstract :** An attempt has been made in the present article to compare the anthropometric characters of female Ho with those of male Ho (Ghosh 1965), collected by the author in the year 1962.

## *Introduction*

THE data on both the sexes were collected on 100 male and 50 female individuals from the villages surrounding Seraikella, a small town in the district of Singhbhum, Bihar. Physically fit individuals between 21 and 65 years of age were taken into consideration for the present study. Measurements were taken according to Martin. Female/Male index is added to table I to show the sexual diamorphism for each measurement. Utility of this index was advocated by Morris Steggarda (1932) wherein he stated, 'It is obvious from such an index that the nearer the index approaches 1, the closer the two sexes are alike for this determination. If the index is more than 1, female is larger than the male, and if less than 1, the male is larger than female'.

## *Data*

### **Stature :**

The mean value of stature in the case of males is  $1600 \pm 5.1$  mm. and that of females is  $1498 \pm 7.5$  mm. The male Hos are therefore 102 mm. taller than females. On specification it has been observed that both male (44%) and female (33%) series have the highest concentration in the short group, though there are instances of very short individuals among both the sexes. Tall individuals are only found among the males.

**Cephalic index :**

The mean head length and head breadth of male Hos is  $186.48 \pm 0.66$  and  $140.56 \pm 0.48$  mm. and that of females is  $178.68 \pm 0.85$  mm. and  $134.62 \pm 0.58$  mm. respectively. The male head is therefore 7.80 mm. longer and 5.94 mm. broader on the average than that of the female. In head measurements the male has got higher values. When cephalic indices are taken into account there is no sex-wise difference between both the sexes. Even in specification data it is observed that male (88%) and female (86%) Ho has got the highest concentration in dolicho-mesocephalic group ; though hyper-dolichocephalic and brachycephalic elements are also found among both the sexes.

**Jugo-frontal index :**

The mean value of minimum frontal breadth and bizygomatic breadth of male Hos is  $100.16 \pm 0.83$  mm. and  $131.9 \pm 0.49$  mm. and that of females is  $98.66 \pm 0.50$  mm. and  $129.88 \pm 0.65$  mm. respectively. Therefore minimum frontal breadth and bizygomatic breadth of the male sex is higher by 1.50 mm. and 2.02 mm. respectively. But in the case of jugo-frontal index there practically exists no sex difference.

**Nasal index and Nasal elevation index :**

The mean value of nasal length, breadth and depth of the male Ho is  $45.72 \pm 0.29$  mm.,  $40.67 \pm 0.27$  mm. and  $16.85 \pm 0.18$  mm. and that of the female is  $41.90 \pm 0.40$  mm.,  $37.48 \pm 0.37$  and  $15.64 \pm 0.27$  mm. respectively. Thus it appears that in nasal measurements also the male Ho shows higher value than the female, being 3.82 mm. longer, 3.19 mm. broader and 1.21 mm. greater is nasal depth. The mean values of nasal index and nasal elevation index in both the series are more or less alike. On specification it has been found that both the sexes have got maximum concentration in the chamaerrhine class. No leptorrhine element was met with in the present study in either of the sexes.

**Discussion**

It is apparent from the above analysis that in all the measurements males show higher values than females.

Differences of sizable magnitude are noticed in the case of stature, head length, head breadth, nasal length, and nasal breadth. Some differences are found in respect of minimum frontal breadth, bizygomatic breadth and nasal depth.

When the question of relative magnitude is taken into consideration with the help of Female/Male index it is observed that differences are greater in the case of nasal length, breadth, nasal depth and stature than in that of head length and head breadth. Both the sexes are closer in magnitude in the case of minimum frontal breadth and bizygomatic breadth.

It is noticed that there is no sex-wise difference in respect of indices, though there are differences in direct measurements. Thus it leads us to conclude that there exists sex-wise difference in size but not in shape.

In a previous article (Ghosh 1965) it was observed that the nasal character of the present Ho differs from those of Mazumdar and Das & Chatterjee. The differences that have come out are certainly a hint regarding the changing pattern of the same character. This is also passively supported by the present study where there is quite an agreement in nasal measurements as well as in their indices among both the sexes. It is also to be recalled that there is no leptorrhine element among the female Hos.

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TABLE 1

Comparison of direct measurements (in mm.) of male Ho and female Ho  
 Mean, Standard Deviation, Min.-Max. value and F/M index

Measurements	Mean $\pm$ S. E.		S. D. $\pm$ S. E.		Min.-Max.		F/M index
	Male	Female	Male	Female	Male	Female	
Stature	1600 $\pm$ 51	1498 $\pm$ 7.5	51.6 $\pm$ 3.6	53.5 $\pm$ 5.3	1466-1757	1389-1583	0.936
Head length	186.48 $\pm$ 0.66	178.68 $\pm$ 0.85	6.60 $\pm$ 0.36	6.01 $\pm$ 0.60	172-204	168-199	0.958
Head breadth	140.56 $\pm$ 0.48	134.62 $\pm$ 0.58	4.00 $\pm$ 0.28	4.11 $\pm$ 0.41	131-149	126-147	0.958
Min. frontal breadth	100.16 $\pm$ 0.83	98.66 $\pm$ 0.50	3.84 $\pm$ 0.27	3.54 $\pm$ 0.35	88-112	90-99	0.985
Bizygomatic breadth	131.9 $\pm$ 0.49	129.88 $\pm$ 0.65	4.96 $\pm$ 0.35	4.62 $\pm$ 0.46	120-143	115-142	0.985
Nasal height	45.72 $\pm$ 0.29	41.90 $\pm$ 0.40	2.99 $\pm$ 0.29	2.85 $\pm$ 0.28	38-53	35-49	0.916
Nasal breadth	40.67 $\pm$ 0.27	37.48 $\pm$ 0.37	2.72 $\pm$ 0.79	2.62 $\pm$ 0.26	34-48	32-45	0.922
Nasal depth	16.85 $\pm$ 0.18	15.64 $\pm$ 0.27	1.89 $\pm$ 0.13	1.97 $\pm$ 0.19	10-22	10-22	0.928

TABLE 2

*Comparison of Indices of male Ho and female Ho*  
*Mean, Standard Deviation and Min.-Max. value*

Index	Mean $\pm$ S. E.		S. D. $\pm$ S. E.		Min. - Max.	
	Male	Female	Male	Female	Male	Female
Cephalic	75.46 $\pm$ 0.32	75.38 $\pm$ 0.42	3.26 $\pm$ 0.23	3.00 $\pm$ 0.30	68.39 - 84.30	68.84 - 81.01
Jugo-frontal	75.75 $\pm$ 0.33	75.94 $\pm$ 0.47	3.37 $\pm$ 0.23	2.99 $\pm$ 0.29	61.48 - 82.03	66.90 - 82.79
Nasal	89.63 $\pm$ 0.90	89.66 $\pm$ 0.97	9.09 $\pm$ 0.64	6.92 $\pm$ 0.69	71.15 - 105.9	72.34 - 105.41
Nasal Elevation	41.51 $\pm$ 0.51	41.73 $\pm$ 0.91	5.19 $\pm$ 0.36	6.48 $\pm$ 0.64	29.27 - 55.0	23.26 - 64.71

TABLE 3

*Comparison of classification of male Ho and female Ho*

## (a) STATURE :

Class	Percentage	
	Male	Female
Very short	4	2
Short	44	32
Below medium	27	30
Medium	15	18
Above medium	5	18
Tall	5	—

## (b) CEPHALIC INDEX :

Hyper-dolichocephalic	4	8
Dolichocephalic	45	44
Mesocephalic	43	42
Brachycephalic	8	6

## (c) NASAL INDEX :

Leptorrhine	—	—
Mesorrhine	21	24
Chamaerrhine	79	76

# ABO BLOOD GROUP AMONG THE JAUNSARIS

MALAY KUMAR BANERJEE

DILIP KUMAR BANERJEE

(Received on 17 February 1967)

**Abstract :** The purpose of this study is to present the ABO blood group data on Jaunsaris who live in Jaunsar-Bawar, Dehra Dun District, Uttar Pradesh.

## *Introduction*

THE Jaunsaris are a people living in Jaunsar-Bawar, Dehra Dun district, Uttar Pradesh, who differ from their neighbours in many physical and cultural features. They are considered by themselves and by others to be ethnically distinct. The members of the higher groups, i.e. Rajputs and Brahmins, are usually tall, handsome and fair complexioned and are considered by some scholars to be descendants of Aryan-speaking immigrants from Central Asia (Grierson 1916 : 7). Then there are dark complexioned aboriginal Doms, who are generally supposed to be descendants of pre-Aryan indigenes (Walton 1911 : 97). The total population of Jaunsar-Bawar as recorded in the 1961 census is 66,684, formed by 37,640 males and 29,044 females. The area is dominated both numerically and economically by Brahmins and Rajputs (Khasas).

Polyandry is practised extensively in Jaunsar-Bawar. 'Polygynandrous' form of family is particularly prevalent among the landowners, the Khasas and Brahmins, whereas its incidence among the other castes who are artisans and landless labourers is much lower. Occasional intermarriage between Brahmins and Rajputs takes place and in such cases children belong to the caste of their fathers.

## *Method*

The ABO blood group data were collected in the month of October 1963 from the villages of Korwa, Naraya, Sainge,

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Shahsha, Koti and Thana. The total number of individuals tested was 154, of whom 100 were Rajput, 29 Kolta and 25 'Artisans' (Bajgi, Barahi, Nai and Lohar).

Blood samples were taken by finger prick and were collected in numbered sterile tubes with 3.0% sodium citrate solution. Immediately after collection, the blood samples were preserved in a thermos-flask containing ice. The samples were tested after washing the cells twice in normal saline solution and making a 2.00% suspension within 5 to 8 hours from the time of collection. The anti-A and anti-B sera were obtained from the Department of Anthropology, Lucknow University, Lucknow, U. P. For the observation of clumping, the slide-method was followed.

The ABO gene frequencies were calculated according to the improved formulae of Bernstein (1930).  $\chi^2$  test was applied for determining the level of significance between various samples.

### Results

The ABO blood group results are presented in table 1. It will be seen from the values of gene frequencies that the frequency of q gene is much higher than that of the p gene in the case of Rajputs and Artisans. But in the case of Kolts, the frequency of p gene and q gene are the same. The frequency of r gene is found to be high in all cases.

TABLE 1  
*ABO Blood groups among Jaunsaris*

Group	No. tested	O	A	B	AB
Rajput	100	27 27.00	22 22.00	37 37.00	14 14.00
Kolta	29	13 44.83	6 20.69	6 20.69	4 13.79
Artisans	25	4 16.00	5 20.00	14 56.00	2 8.00
Total	154	44 28.57	33 21.43	57 37.01	20 12.99

Note: The percentage is given below the observed number.  $\chi^2$  for homogeneity amongst Rajputs, Kolts and Artisans.  $\chi^2$  6d. f. = 9.287, 0.20 > P > 0.10.

Group	Gene frequencies			Goodness of fit $\chi^2$ 1 d.f.
	p	q	r	
Rajput	0.1980	0.2971	0.5048	0.754
Kolta	0.1858	0.1858	0.6285	3.013
Artisans	0.1552	0.4098	0.4350	0.872
Total	0.1885	0.2903	0.5212	1.032

The Rajputs and Koltas show quite a high frequency of r gene as compared to p gene and q gene; but in the case of the Artisans, the frequency of the r gene is slightly higher than that of q gene.

It is apparent from the test of homogeneity by  $\chi^2$  that the three samples, namely, Rajput, Kolta and Artisans are homogeneous in respect of their ABO gene frequencies; therefore, they have been pooled together to present a single population, namely, the Jaunsari.

### *Comparision with Majumdar's data*

Table 2 shows ABO gene frequencies of populations with which the Jaunsari blood group data can be compared.

TABLE 2  
*ABO gene frequencies in certain tribal populations of U.P.*

Population	Author	Number tested	Gene frequencies		
			p	q	r
Bhoksa	Majumdar (1947)	144	0.1808	0.2886	0.5306
Korwa	Majumdar (1943)	147	0.2734	0.1775	0.5491
Khasa	Majumdar (1947)	246	0.2839	0.2207	0.5454
Khasa (Artisans)	Majumdar (1947)	108	0.1903	0.3012	3.5085
Tharu	Majumdar (1942)	240	0.1913	0.3267	0.4820
Jaunsari	Present author	154	0.1885	0.2903	0.5212

It appears that in Majumdar's sample the frequency of p gene is slightly higher than that of q gene ( $p=0.2339$  and  $q=0.2207$ ) among the Khasas, while in the present sample (Jaunsaris) the frequency of q gene is quite high as compared to that of p gene ( $p=0.1885$  and  $q=0.2903$ ). On the other hand, the two samples of Artisans (one tested by Majumdar and the other in the present study) showed no difference in their gene frequencies, as in both the samples, the frequency of the q gene is higher than that of p gene.

It may be pointed out that the Khasas of Jaunsar-Bawar, U. P., tested by Majumdar show high frequency of p gene, while in the present sample of the Jaunsaris, we find a high frequency of q gene. The reason for this difference lies in the fact that Majumdar's sample includes Brahmins and Rajputs, whereas in the present study, the Rajputs, Koltas and Artisans have been dealt with separately. It is observed that the Artisans, i.e. the Bajgis, Barahis and Nais, show high frequency of q gene as compared with the Rajputs. Hence it can be said that, because Majumdar included Brahmins, a slightly high frequency of p gene amongst the Brahmins might have raised the frequency of p gene in Khasas tested by Majumdar. However, on the basis of  $\chi^2$  test, there is no difference between the present and Majumdar's sample.

It is interesting to note that the Tharus exhibit a very high frequency of q gene as compared to the other groups, and the Korwas are the only exception who show a higher incidence of p gene.

TABLE 3

*Values of  $\chi^2$  for inter-group differences with regard to ABO blood groups*

Pair of samples	$\chi^2$	3 d.f.	Probability
Jaunsari $\times$ Bhoksa	0.257		$0.98 > p > 0.95$
Jaunsari $\times$ Korwa	12.667		$0.01 > p > 0.001$
Jaunsari $\times$ Khasa	5.370		$0.20 > p > 0.10$
Jaunsari $\times$ Khasa (Artisans)	1.214		$0.80 > p > 0.70$
Jaunsari $\times$ Tharu	1.863		$0.70 > p > 0.50$

When Jaunsaris are compared with other groups (Table 3) studied by Majumdar, it is seen that  $\chi^2$  values in all cases are statistically insignificant except in the case of the Korwas.

### Conclusion

It will be recalled that serologically the Rajputs, Koltas and Artisans of Jaunsar-Bawar represent a homogeneous population. On the basis of ABO gene frequencies, it is observed that Jaunsaris show a greater resemblance to the Bhokas of U. P. than other tribal groups of Uttar Pradesh. However, this resemblance does not imply genetic relationship between the two populations unless this is further corroborated by other genetical traits. It is further observed that all the groups are high in the frequency of q gene, but the Korwas of U. P. are the only exception who show a greater incidence of p gene.

The Korwas are considered to have originally belonged to the Munda-speaking groups, who however gave up their Mundari language in favour of Indo-Aryan long ago. According to Grierson (1916), the Mundari tongue of the Korwas is within the Kherwari division of the Munda family of languages, and is most akin to the Kharia language. Physically, they are a part of the larger Australoid section of the Indian subcontinent. On the other hand, all other groups, namely, Bhoksa, Khasa, Jaunsari, from whom the Korwa distinctly differ in the ABO blood group pattern, are considered to be of Mongolian origin in varying degrees. It is to be noted that none of these people of Mongolian origin show any basic difference in ABO blood group frequencies between themselves.

Majumdar (1940) pointed out that there has been some infusion of Mongoloid blood amongst the Khasas, but it has not occurred to any appreciable extent in Jaunsar-Bawar. It is found in Garhwal and the adjoining states, and it is possibly due to Tibetan infiltration. Here, it can be mentioned that Mongoloids are high in q gene. Lundman (1948) pointed out on the basis of the distribution of ABO genes in the world, that 'The co-relation between racial relationship and serological similarity is not very close. Central Mongoloids and Hindus,

physically so utterly unlike, exhibit practically the same serological pattern.' The same thing occurs here with the Jaunsaris as physically they are very similar to the Mediterranean race (Caucasoid), but considering the result of the present study it may be emphasized that the Jaunsaris belong to the population of south-eastern Asia inhabited by the Mongoloids.

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#### A C K N O W L E D G E M E N T S

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# A STUDY OF THE HIRA FOOT

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**Abstract :** The authors have compared the characters of the foot among the Hindu pottery-manufacturing Hira caste of the plains of Assam and of the Khasi and the Rabha, both of whom are hill-tribes having Mongoloid physical affinities. Some of the Rabha however live in the plains below the hills.

Significant differences have been observed among these three populations.

## *Introduction*

THE Hira form one of the two castes who traditionally manufacture pottery in Assam ; the other caste being the Kumar. Their peculiarity is this that they make pottery only by hand. The Kumar, on the other hand, manufacture pottery by means of the wheel. It is also important to note that the manufacture of pots is exclusively a feminine task among the Hira.

The Hira are found sporadically almost all over the Plains districts of Assam ; but their main concentration is in the district of Goalpara and also in Nowgong and Kamrup. In the month of October 1966, data on foot were collected by the first writer from among 105 adult female and 76 adult male Hiras, in and around the village of Marnai in South Goalpara, Assam. The contour method was applied in collecting the foot tracings. The method is essentially the same as that described by Sarkar (1958).

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The present article deals with the frequencies of the three types of foot, namely T, O and F, as found among the Hira. The frequencies of different homo- and hetero-types have also been calculated. Metric characters like foot length, foot breadth, foot index, hallux divergence, angle of foot, have also been taken into account. The interspaces have also been studied. The present data have been compared with the data on some tribes of Assam, namely, the Khasi and the Rabha.

In this connexion, it should be mentioned that the Hira form a caste among the Hindus, while the Khasi and the Rabha are two Mongoloid tribes.

### *The Data*

#### **A. Relative lengths of the 1st and 2nd toes**

On the basis of the relative lengths of the first and second toes, three types of foot are found. These are T, where the first toe is longest ; F, where the second toe is longest, and O, where the first and the second are of equal length. The frequencies of these three types among the Hira have been given in table 1.

TABLE 1

*Relative lengths of the 1st & 2nd toes among the Hira*

Number		Right			Left			Combined		
		T	F	O	T	F	O	T	F	O
		%	%	%	%	%	%	%	%	%
Male	76	85.52	2.63	11.84	92.10	3.9	3.94	88.81	3.28	7.81
Female	105	86.66	9.52	3.80	88.57	5.70	5.70	87.61	7.61	4.76

It appears from table 1 that the T type of foot occurs almost in equal percentages in both the sexes. The percentage of F type is higher among females (7.61%) than among males (3.28%). The reverse is true in the case of O, which occurs in 7.81% among males and in 4.76% among females.

TABLE 2

Comparison of data

People	Sex	Number	T	F	O	Author
			%	%	%	
Hira	Male	76	88.81	3.28	7.89	Present study
Khasi	„	56	87.50	7.14	5.35	Das and Ujir
Rabha	„	300	69.66	16.50	13.83	Do.
Hira	Female	105	87.61	7.61	4.76	Present study
Khasi	„	62	76.60	8.06	15.31	Das and Ujir
Rabha	„	300	72.66	18.33	9.00	Do.

In table 2, the present data have been compared with the Khasi and the Rabha data. The Khasi speak a Mon-Khmer language and thus form a member of the Austric linguistic family while the Rabha are a member of the Bodo group, who speak a Tibeto-Burman language. Both of these two peoples are Mongoloid. The Hira, on the other hand, form a Hindu caste-group in Assam. In respect of the character of foot, some differences between the Khasi and the Rabha are obvious from the table. This difference was already pointed out by Das and Ujir (1961). As regards the female sex, the Hira differ from these two Mongoloid populations, namely, the Khasi and the Rabha. The difference, at least in respect of the occurrence of F and O types in the case of the male sex, may also be pointed out.

The F type of foot occurs more frequently among females than among males in these three populations. Hawkes (1913-14) also found a similar result.

#### B. Homo- and Hetero-types

In table 3, the frequencies of the various combinations of the homo-type and hetero-type as found among the Hira, Khasi and Rabha are given.

TABLE 3

*Frequency of homo- and hetero-types*

People	Sex	No.	TT	FF	OO	TF	FT	TO	OT	FO	OF
			%	%	%	%	%	%	%	%	%
Hira	Male	76	80.26	—	1.31	2.63	2.63	9.21	2.63	1.31	—
Khasi	"	56	80.35	3.57		3.78	3.57	8.92	—	1.78	—
Rabha	"	300	60.33	10.66	5.66	3.00	4.00	3.66	7.66	4.33	0.66
Hira	Female	105	80.95	1.90	0.95	5.70	2.85	1.90	2.85	0.95	1.90
Khasi	"	62	69.35	3.22	6.44	1.61	6.44	6.44	3.22	1.61	1.61
Rabha	"	300	63.00	11.00	2.66	3.66	7.00	4.83	4.33	2.33	1.66

The homo-type TT occurs in the highest frequency among both the sexes of the Hira, the percentages being almost equal (male 80.26% ; female 80.95%). Among males, the next highest frequency is shown by TO (9. 21%), which is followed by TF, FT and OT (2. 63%) ; and OO and FO (1. 31%). Among females, the next highest percentage is shown by TF (5. 70%), which is followed by FT and OT (2. 85%) ; and OF, TO, FF (1. 90%) and by FO and OO (0. 95%).

As in the case of the occurrence of the three types of foot, in respect of the frequencies of the various homo- and hetero-types also, the Hira females appear to be different from the females of the Rabha and the Khasi. Difference between the Hira male and the Rabha male is also apparent.

### C. Interspaces

Sarkar (1958) identified eleven types of interspaces between the toes in the human foot. His different types of interspaces are :

1. Coalescent
2. Slit-like
3. Tubular
4. Bulbous      4a. circular base ;    4b. triangular base
5. Rectangular

- 6. V form      6a. elongated ;      6b. constricted
- 7. U form      7a. wide ;      7b. constricted
- 8. Y form
- 9. Hooked
- 10. M form
- 11. Pointed

We have added one more type, which we have called the broad type (No. 12). We have distinguished another subtype under Bulbous ; and that is with a flat base (No. 4c).

The distribution of the above 12 types in the right and left foot of the two sexes of the Hira have been studied separately and the result given in table 4.

TABLE 4.a  
*Percentage frequency of Interspace form*

HIRA MALE

Types	Lt.				Rt.			
	I %	II %	III %	IV %	I %	II %	III %	IV %
0	5.26	39.47	55.26	59.21	6.57	34.21	34.21	39.47
1	21.06	6.57	18.42	15.78	31.57	7.89	11.84	7.89
2	—	6.57	1.31	2.63	2.63	—	2.63	2.63
3	—	7.89	1.31	—	2.63	5.26	9.21	3.94
4a	10.52	6.57	3.94	1.31	9.21	16.52	3.94	1.31
4b	9.21	—	2.63	—	5.26	9.21	5.26	3.94
4c	3.94	—	—	—	—	—	1.31	1.31
5	13.15	—	—	—	11.84	—	—	6.57
6a	1.81	—	3.94	5.26	—	—	6.57	6.57
6b	—	—	—	1.31	—	—	3.94	6.57
7	28.94	5.26	1.31	—	21.06	2.63	3.94	1.31
7a	—	—	—	—	1.31	1.31	—	2.63
7b	6.57	1.31	1.31	1.31	6.57	6.57	1.31	5.26

Types	Lt.				Rt.			
	I %	II %	III %	IV %	I %	II %	III %	IV %
8	—	14.47	7.89	—	—	14.47	3.94	2.63
9	—	—	—	—	—	—	1.31	—
10	—	3.94	—	—	—	6.57	3.94	—
11a	—	6.57	1.31	—	1.31	1.31	1.31	1.31
11b	—	1.31	1.31	—	—	—	—	—
12	—	—	—	—	—	—	—	5.57

TABLE 4.b

Percentage frequency of Interspace form

HIRA FEMALE

Types	Lt				Rt			
	I %	II %	III %	IV %	I %	II %	III %	IV %
0	1.90	15.23	18.09	32.38	2.85	13.33	38.09	60.95
1	7.61	4.76	7.61	12.38	2.85	7.61	18.09	13.33
2	0.95	7.61	1.90	1.90	0.95	5.70	2.85	2.85
3	7.61	12.38	19.04	4.76	2.85	17.14	7.61	2.85
4a	22.85	16.19	18.09	11.42	14.28	7.61	7.61	2.85
4b	4.76	2.85	2.85	9.52	3.80	0.95	1.90	3.80
4c	3.80	0.95	—	—	—	0.95	—	0.95
5	11.42	1.90	1.90	2.85	15.23	0.95	—	1.90
6a	—	4.76	3.80	9.52	—	4.76	5.70	3.80
6b	—	—	0.95	0.95	—	2.85	—	—
7	31.42	17.14	13.33	5.70	46.66	13.33	4.76	0.95
7a	1.90	0.95	—	—	0.95	—	—	—
7b	3.80	3.80	2.85	3.80	8.57	2.85	2.85	—
8	1.90	2.85	3.80	—	0.95	11.42	7.61	4.76
9	—	—	—	—	—	—	—	—
10	—	1.90	2.85	—	—	1.90	1.90	—
11a	—	6.66	0.95	0.95	—	5.70	—	0.95
11b	—	—	0.95	1.90	—	2.85	0.95	—
12	—	—	0.95	1.90	—	—	—	—

TABLE 5

*Frequency of Interspaces (Rt+Lt) among the Hira*

Types	Male				Female			
	I %	II %	III %	IV %	I %	II %	III %	IV %
Absent	5.92	36.84	44.74	49.34	2.38	14.28	28.09	46.66
Others	94.08	63.16	55.26	50.66	97.62	85.72	71.91	53.34

Table 5 reveals a wide sexual variation in respect of the occurrence of interspaces among the Hira. The variation is more marked in the case of interspaces II and III than in I and IV. In most of the individuals, both male and female, interspace is present in the 1st place ; its percentage being 94.08 in male and 37.62 in female. In both the sexes, the least number of interspace occurs in the IVth place. The frequency of interspaces decreases from I to IV through II and III in both the sexes. It is seen that the females, as a whole, show more interspaces between the toes than the males among the Hira.

TABLE 6

*Presence of Interspaces (Rt+Lt) among some populations of Assam*

	Male				Female			
	I	II	III	IV	I	II	III	IV
Hira	94.08	63.16	55.26	50.66	97.62	85.72	71.91	53.34
Rabha	60.00	37.50	45.50	51.33	63.66	52.66	53.33	56.33
Khasi	75.89	29.46	20.53	7.14	80.64	50.00	41.10	13.70

It is apparent from table 5 that the Hira show interspaces in higher frequencies in all the four positions than the Khasi. A similar picture is seen when the Hira and compared with the Rabha ; excepting that in the IVth position the frequencies in the two peoples are almost the same. Among all these three populations, females as a whole show more interspaces than males.

## D. Anthropometric characters

The following anthropometric characters have been taken into account : (1) foot length, (2) foot breadth and (3) hallux divergence angle (foot angle). The measurements were taken on the tracings of the foot. The length-breadth index of foot (foot index) has also been calculated. The mean values of the above characters of the Hira have been presented in table 7. Table 8 shows the values of *t*—test of significance between the right and the left foot.

TABLE 7

*Mean values of the characters of Hira foot*

	Left Mean $\pm$ S.E	Right Mean $\pm$ S.E	Combined Mean $\pm$ S.E	Range
<b>Foot length (in cm.)</b>				
Male	24.54 $\pm$ .12	24.59 $\pm$ .12	24.56 $\pm$ .12	21.9—27.6
Female	22.63 $\pm$ .11	22.64 $\pm$ .10	22.63 $\pm$ .10	20.5—25.7
<b>Foot breadth (in cm.)</b>				
Male	10.11 $\pm$ .06	9.99 $\pm$ .06	10.05 $\pm$ .06	8.5—11.6
Female	9.24 $\pm$ .05	9.07 $\pm$ .05	9.15 $\pm$ .05	7.7—10.7
<b>Length-Breadth Index</b>				
Male	41.45 $\pm$ .12	40.67 $\pm$ .22	41.06 $\pm$ .15	37.1—47.0
Female	40.77 $\pm$ .12	39.84 $\pm$ .15	40.31 $\pm$ .13	26.1—45.4
<b>Hallux divergence angle</b>				
Male	7.52° $\pm$ .13	7.45° $\pm$ .13	7.48° $\pm$ .13	5.0°—11.0°
Female	7.25° $\pm$ .11	7.30° $\pm$ .11	7.27° $\pm$ .11	5.0°—11.0°

TABLE 8

*Difference of mean : t-test of significance*

	Hira Right	male Left	Hira Right	female Left
	Diff.	t	Diff.	t
Foot length	0.05	0.29	0.01	0.06
Foot breadth	0.12	1.50	0.17	2.42
Foot index	0.78	3.10	0.13	4.84

It appears from tables 7 and 8, that the differences between the right and the left foot of the Hira male and Hira female are not much. Significant difference is observed only in the case of foot index of both the sexes.

In table 9, the mean values of the Hira, the Rabha and the Khasi have been compared. In table 10, the difference of mean and the values of *t* have been given.

TABLE 9  
*Comparison of Means*

	<b>Foot length</b> (in cm.)	<b>Foot breadth</b> (in cm.)	<b>Foot index</b>	<b>Foot angle</b>
	<b>Mean <math>\pm</math> S.E</b>	<b>Mean <math>\pm</math> S.E</b>	<b>Mean <math>\pm</math> S.E</b>	<b>Mean <math>\pm</math> S.E</b>
<b>Male</b>				
Hira	<b>24.56 <math>\pm</math> .12</b>	<b>10.05 <math>\pm</math> .06</b>	<b>41.06 <math>\pm</math> .15</b>	<b>7.48° <math>\pm</math> .13</b>
Khasi	<b>23.58 <math>\pm</math> .11</b>	<b>10.07 <math>\pm</math> .06</b>	<b>42.43 <math>\pm</math> .28</b>	<b>7.00° <math>\pm</math> .10</b>
Rabha	<b>23.97 <math>\pm</math> .07</b>	<b>9.97 <math>\pm</math> .05</b>	<b>40.74 <math>\pm</math> .13</b>	<b>6.73° <math>\pm</math> .06</b>
<b>Female</b>				
Hira	<b>22.63 <math>\pm</math> .10</b>	<b>9.15 <math>\pm</math> .05</b>	<b>40.31 <math>\pm</math> .13</b>	<b>7.27° <math>\pm</math> .11</b>
Khasi	<b>21.95 <math>\pm</math> .11</b>	<b>9.37 <math>\pm</math> .05</b>	<b>41.98 <math>\pm</math> .27</b>	<b>7.01° <math>\pm</math> .11</b>
Rabha	<b>22.02 <math>\pm</math> .07</b>	<b>8.74 <math>\pm</math> .03</b>	<b>39.58 <math>\pm</math> .13</b>	<b>6.59° <math>\pm</math> .06</b>

TABLE 10  
*Difference of mean : t-test of significance.*

	<b>Foot length</b>		<b>Foot breadth</b>		<b>Foot index</b>	
	<b>Diff.</b>	<b>t</b>	<b>Diff.</b>	<b>t</b>	<b>Diff.</b>	<b>t</b>
	(in cm.)		(in cm.)		(in cm.)	
<b>Male</b>						
Hira - Khasi	0.98	6.05	0.02	.25	1.37	4.32
Hira - Rabha	0.59	4.24	0.08	1.14	0.82	1.61
<b>Female</b>						
Hira - Khasi	0.68	4.60	0.28	3.14	1.67	5.58
Hira - Rabha	0.61	5.00	0.41	8.20	0.73	4.00

**Male:** The Hira have significantly longer foot than the Rabha and the Khasi. In respect of breadth, the differences are, however, not statistically significant. The Hira differ from the Khasi in respect of the foot index also. In this connexion, it should be mentioned that the Khasi are a hill people, while the Hira live in the plains. The Rabha also live in the plains ; but some members live on the hillocks of the foot-hills. The Hira show a larger angle than the Rabha and the Khasi.

**Female:** In respect of all the characters, namely, foot length, foot breadth and foot index, the Hira differ from the Khasi and also from the Rabha. The differences are statistically significant. The foot of the Hira is longer than that of the other two populations. It is narrower than that of the Khasi, but broader than that of the Rabha. The angle of foot of the Hira is larger than those of the Rabha and also the Khasi.

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# THE A-B RIDGE COUNT IN PALMAR DERMATOGLYPHICS OF THE IZHAVAS OF KERALA

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**Abstract :** The present paper records the a-b ridge count on the palmar dermatoglyphics of the Izhavas, a caste living in the Malabar, Cochin and Travancore districts of Kerala.

## *Introduction*

**T**HF Izhavas, also called Illavans, numbering 1,84,504 (1901 census) are chiefly found in the Malabar, Cochin and Travancore districts of Kerala. There are, broadly speaking, three endogamous groups among these people, namely, Tiyya Chone (Chovan), Pandy Chone and Velan Kandi Chone. Their main occupation is cultivation of the coco-nut and arrack-distilling. Both types of cross-cousin marriage, matri-lateral and patri-lateral, are practised. Although marriage between distant relatives predominates, the frequency of the patri-lateral one is about 10% (Malhotra and Bhanu 1966).

A number of cultural studies (Aiyappan 1945 ; 1965) are now available on these people, unfortunately very little is known about their morphological characters and genetical traits. In an earlier study, Malhotra and Bhanu (1966) reported data on middle-phalangeal hair, ear lobe attachment, hand-clasping and digital formulae among these people.

The present paper attempts to record the a-b ridge count in palmar dermatoglyphics of the Izhavas, which is hitherto unreported. The present endeavour is to throw light on mainly three aspects of a-b ridge count, namely, (i) the bimanual differences, (ii) the sexual dimorphism and (iii) the utility of a-b ridge count in inter-population studies.

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Fang (1950) classified the a-b ridge count (total a-b ridge count of the two palms) of an individual into 'low value' and 'high value'. The a-b count is termed 'low' if it is 78 or less and high if it exceeds 78. On the basis of family data (Fang 1950) suggested that the transmission of this trait is governed by a pair of allelomorphic genes. He further suggests that the allele for the 'high' value is dominant over that of the 'low' value. Pons (1964) postulates that the a-b ridge count is inherited and 'that the hypothesis of a polymeric system with genes of additive effect cannot be discarded' (p. 273). Mitra *et al.* (1966), on the basis of 49 families in which 119 children are involved, demonstrated that a-b ridge count 'could be due to "polygenes".....which may act alone or in combination producing differential a-b ridge count' (p. 26). Thus it is evident from the above studies that the exact mode of inheritance of this trait is yet to be established.

The earlier studies on this trait have failed to reveal any, statistically speaking, bisexual and bimanual (in both the sexes) differences (Fang 1950; Datta 1961; Seth 1963; Dash Sharma 1966). Bhattacharya (1966) and Bansal (1966), however, report a marked sex difference among the Anglo-Indians of India and Maharashtrians.

### *Methods and materials*

The material analysed in this paper consists of bilateral palms of 100 (50 male and 50 female) unrelated Pandy Chone Izhavas. The sample was collected from the village of Kazhakkuttam, 9 miles northwest of Trivandrum.

The techniques followed for analyzing and collecting palmar prints were those recommended by Cummins and Midlo (1961). The two digital triradii a-b were joined by a fine straight line and every ridge, excluding the triradial points, cutting or touching this straight line was included in the count.

### *Results and discussion*

In table 1 the frequency distribution of a-b ridge count in 50 males and 50 females is given. It is evident from table 1

and figure 1 that the distribution of individuals in various classes is different in males and females. In the male group the clustering is at two points, namely, 73-75 and 82-84, while in the female group it is only at one point, namely, 73-75.

Although statistically speaking, there is no difference in the mean values of total ridge count among males and females, the former certainly possess high value. It is interesting to note that out of 11 population groups (7 European and 4 Indian) on which the a-b ridge count data are available on both males and females, 6 showed higher values in males and the rest in females. It may also be mentioned that out of the 4 Indian populations, 3 possessed high values for males.

The mean of total a-b ridge count for males is 79.30 and for females 75.66. The range of variation of this trait in males and females is 58-108 and 52-117 respectively.

The bimanual differences are insignificant in both the sexes.

It is very significant to note that (Table 2) the mean total a-b ridge count known for seven European populations is decidedly high when compared to the Indian populations worked out so far. The mean among European populations and Indian groups ranges from 79.84—85.88 and 76.92—80.25, respectively, the latter value being that of the Ladakhis.

Although a good deal of variation in this trait is observed among the Indian populations, statistically speaking, there are no significant inter-population differences. It may, however, be mentioned that when some of the Indian population groups are compared with European populations, significant differences are observed. Since data on populations of Negro or Negroid and Mongoloid origin are not yet available, the utility of a-b ridge count in ethnic discrimination remains to be fully explored.

Another interesting finding which is worth mentioning is the rather high percentage of persons with 'low count' in Indian populations. This is in conformity with the findings of earlier workers (Datta 1961 ; Seth 1963 ; Bansal 1966, etc.)

The low value ranges from 42.59 per cent to 61.20 per cent among the Indian populations. For Izhavas, however, it is 57%.

### *Summary*

1. Data on total a-b ridge count of 100 (50 male and 50 female) Pandy Chone Izhavas of Kerala is reported.
2. The males show a higher mean total a-b ridge count (79.30) than the females (75.66).
3. The bimanual differences are not marked in either sex.
4. The difference between the sexes in a-b ridge count is insignificant.
5. Although variations in this trait are observed in Indian populations, they are insignificant.
6. The Indian population groups show a lower value of mean total a-b ridge count and a high percentage of individuals having 'low counts' when compared with European populations.
7. A plea is made to collect data on this trait on populations of Negro or Negroid and Mongoloid origin, if a correct evaluation of this trait, as a population marker, is to be examined.

TABLE 1

*Frequency distribution of total a-b ridge count among  
Izhava males and females*

Group Number	Range of total a-b ridge count	Number of individuals	
		Male	Female
1	52 - 54	0	1
2	55 - 57	0	2
3	58 - 60	1	1
4	61 - 63	2	5
5	64 - 66	4	4
6	67 - 69	3	3
7	70 - 72	3	5
8	73 - 75	9	9
9	76 - 78	3	2
10	79 - 81	3	6
11	82 - 84	8	4
12	85 - 87	6	3
13	88 - 90	1	0
14	91 - 93	0	2
15	94 - 96	4	0
16	97 - 99	0	1
17	100 - 102	1	1
18	103 - 105	1	0
19	106 - 108	1	0
20	109 - 111	0	0
21	112 - 114	0	0
22	115 - 117	0	1
	Total	50	50
Mean a-b ridge count		79.30	75.66
Mean a-b ridge count for the right hand		39.04	37.42
Mean a-b ridge count for the left hand		40.26	38.24
Percentage of 'low count'		50%	64%

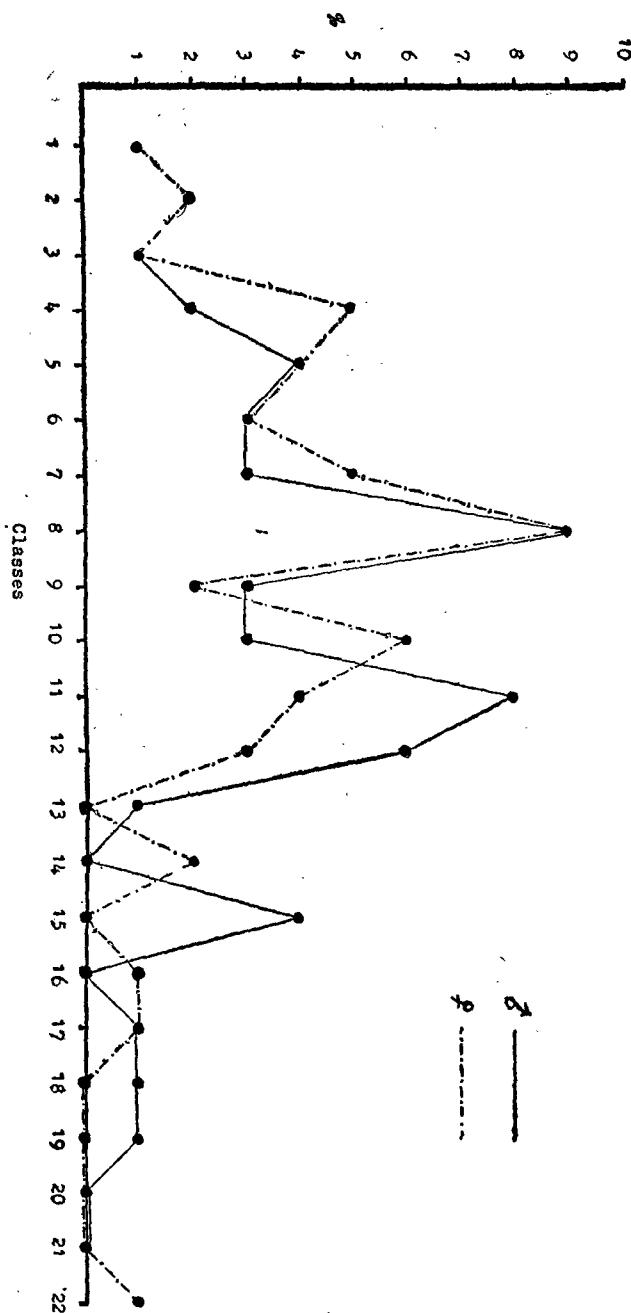


Figure 1: showing the frequency distribution of a-b ridge count in Izhava males and females.

TABLE 2

*The mean a-b ridge count in different populations*

Population	Sex	No.	Mean	S. D.	Percent. of low value	Source
1. British	M	424	88.04	10.3	29.7	Fang 1950
	F	435	83.01	9.7	26.7	
	T	859	83.03	10.1	28.3	
2. Ontario British	M	77	86.25	10.5	27.3	Fang 1950
	F	83	85.54	10.2	24.1	
	T	160	85.88	10.3	25.6	
3. Ontario Indian (P. S.)	M	26	83.42	8.7	34.6	Fang 1950
	F	14	85.64	9.9	14.3	
	T	40	84.20	9.0	27.5	
4. Ontario Indian (N. I.)	M	29	80.00	9.1	37.9	Fang 1950
	F	43	81.08	10.5	32.6	
	T	72	80.51	9.9	37.4	
5. Bavarian	M	50	80.96	—	38.00	Baitsch and Sch- warzfischer 1959
	F	150	83.97	—	34.66	
6. European Russians	M	26	81.38	11.2	42.3	Fang 1950
	F	38	80.16	9.7	42.1	
	T	64	80.66	10.3	42.2	
7. European Jews : Polish	M	41	79.74	13.0	51.2	Fang 1950
	F	27	79.98	7.8	40.7	
	T	68	79.84	11.1	47.1	
8. Indians (Andhra Pradesh)	M	80	76.92	8.1	61.20	Datta 1961
	F	—	—	—	—	
	T	—	—	—	—	
9. Indians (Punjab)	M	62	76.42	12.48	54.84	Seth 1963
	F	38	80.68	9.08	55.26	
	T	100	78.04	11.41	55.00	
10. Indians (Ladakhis)	M	54	80.25	11.22	42.59	Das Sharma 1966

Population	Sex	No.	Mean	S. D.	Percent of low value	Source
10. Anglo-Indians	M	—	86.16	—	—	Bhattacharya 1966
	F	—	77.25	—	—	
	T	—	81.71	—	—	
11. Indians	M	72	82.89	5.51	31.94	Bansal 1966
(Mahara-	F	73	76.82	7.92	58.90	
shtrians)	T	145	79.83	14.91	45.52	
12. Indians	M	50	79.30	10.49	50.00	Present study
(Izhavas	F	50	75.66	12.21	64.00	
Kerala)	T	100	77.48	12.13	57.00	

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## BOOK REVIEWS

**Anthropological Approaches to the Study of Religion.** Edited by Michael Banton. Tavistock Publications, London, 1966. 30 shillings.

This is the third monograph published by the Association of Social Anthropologists of the Commonwealth in the series 'New Approaches in Social Anthropology'. Clifford Geertz, one of the contributors to the volume is of opinion that studies of religion are in a state of general stagnation, as there has been no theoretical advance of major importance. 'In this field anthropologists have been "living off the intellectual capital" of their ancestors and their concepts are drawn from a very narrowly defined intellectual tradition.' These castigatory remarks are not wholly justified if we consider the acute and complicated analyses of religious phenomena made by anthropologists in the last two decades. His plea for a wider treatment of cultural dimensions of religious analysis is however welcome. By explaining the role of religion in social relations we do not explain the whole of religion. For a better understanding of a set of phenomena so complicated as religion, better techniques of investigation derived from more than one discipline are surely needed. Sociological explanation has to be supplemented by psychological explanation.

Both Geertz and Spiro grapple with the problem of giving a suitable definition of religion. Geertz defines it as 'a system of symbols which acts to establish powerful, pervasive, and long lasting moods and motivations in men by formulating conceptions of a general order of existence and clothing these conceptions with an aura of factuality that the moods and motivations seem uniquely realistic.' He goes on to elaborate the definition with a penetrating analysis of the specific situation in Java. He feels that anthropologists have neglected the analysis of the system of meanings embodied in the symbols which make up religion proper.

Spiro defines religion as 'an institution consisting of culturally patterned interaction with culturally postulated superhuman beings'. According to him most studies of religion are concerned with its

role in the explanation of society ; its contribution to societal integration by its satisfaction of sociological wants. This, however, does not provide an explanation of religion. The three other contributors to this volume, namely, Turner, Bradbury and Winter, have discussed such topics as ancestor cults, initiation ceremonies, political rituals and the social context of myths with reference to the three African societies they have studied.

Sachchidananda

**Social Anthropology of Complex Societies.** *Edited by Michael Banton.* Tavistock Publications Limited, London. 1966. 30 shillings.

This is the fourth and final volume emerging from the labours of a conference on 'New Approaches in Social Anthropology' sponsored by the Association of Social Anthropologists of the Commonwealth. The contents of the volume bring home the fact that Social Anthropology is no longer confined to the study of pre-literate simpler societies but embraces in its span such communities as Italian peasants, African townsmen, Indian village politicians, Welsh villagers and the smaller colonial or ex-colonial territories, such as Fiji and Mauritius. This raises new questions on the methodological plane. Trained as the anthropologists are in observation and interview and with a predisposition towards the study of small societies or areas, are they duly equipped to deal with the problems of more complex societies ? This volume attempts, by implication, to find an answer to these questions.

Wolf finds the anthropologists' justification in the study of complex societies in the fact that some of such societies are not quite well organized and tightly knit. The formal framework of economic and political power is intermingled with various other kinds of informal structure which are interstitial, supplementary and parallel to it. How the informal structure ties up with the formal may also be explored by the anthropologist. Wolf has analysed kinship, friendship and patron-client relationship with reference to his data from Middle America.

Burton Benedict examines the sociological characteristics of small territories and their implications for economic development. He analyses the relation between the scale of society and the

number, kinds and duration of social roles : types of value and alternatives, magico-religious practices, jural relations, political structure and economic development.

Mitchell distinguishes between 'historical' or 'processive' change which includes over-all changes in the social system and 'situational change' which covers changes in behaviour following participation in different social systems. He also emphasizes with Wolf the importance of studying the 'network of personal links which the individuals build around themselves.'

Drawing on his data on the village electoral struggle in Central India, Adrian Mayer brings out the importance of networks and action-sets of relations as against groups and tries to clarify and refine these concepts. He hopes that social anthropologists of the future would have to deal more adequately with ego-centred entities, such as action-sets and quasi-groups rather than with groups and sub-groups.

The essays in this volume, as in others, illustrate a drive towards the breaking up of established concepts in order to examine more meticulously the framework of social relations and the interaction between individuals. Mayer analyses closely the concept of network given by Barnes (1954) and Bott (1957) and clarifies different kinds of networks and action-sets. In the same way Mitchell makes a distinction between structural and categorical relationships, i.e., relationships set in associations and institutions and relationships based on common attributes, such as race, tribe and class.

The search for broad hypotheses or theory is illustrated by Loudon in his essay on 'Religious Order and Mental Disorder'. While social anthropologists are ready to turn to other disciplines in search of explanation, the British confine themselves to a narrower range than the American.

It is unfortunate that none of the essays in the present volume deals with the growing importance of tradition in the study of complex societies in the East and the strong links forged between social anthropology and history as a consequence.

**Musulmanskiye techeniya v obshchestvennoy mysli Indii I Pakistan**  
*(The Muslim current in the social thought of India and Pakistan),*  
*L. P. Gordon-Polonskaya, Moscow. Pp. 326.*

After the creation of Pakistan, scholars have zealously begun exploring the problem of 'Muslim nationalism', which is held to have led to the division of India two decades ago. The Pakistani historians were specially concerned, because they were called upon to justify and provide the theoretical basis of the newly established state. Equally concerned were some Britishers for their role in the growth of this movement. Hence, sometimes with their direct or indirect encouragement, a vast amount of literature on the subject has begun to be produced. (K. K. Aziz's *Britain and Muslim India* is just an example.) Scholars belonging to other countries were also attracted and in the volume under review, a Soviet scholar tries to explain and understand this movement.

The author rightly remarks that the problem of Muslims in India differed from the problems of Muslims in the Near East and the Middle East. In the latter areas, the Muslims formed the majority community while in India they were in a minority. This accounts for special features of Muslim nationalism in India and also its different reaction to the movement of Pan-Islatism.

In India this Muslim nationalism was characterized by a duality. The feudal element tried to go back to the past practices of Islam, and on this issue even clashed with the foreign rulers, thereby obtaining for it an anti-British character. (The Wahhabi movement of the XIXth Century illustrates this point.) But the bourgeoisie like their Hindu counterpart tried to modernize their religion. However, as the Muslim bourgeoisie had lagged behind, they sought the support and protection of the British rulers. The English were only too glad to prop up the Muslim bourgeoisie against the Hindu middle-class, whose acquisition of influence was disquieting to the foreign masters. Dr. Bimanbehari Majumdar has shown in his recent book, *History of Indian Social and Political Ideas*, that in 1870-71 not a single Muslim youth graduated. Still they occupied 88 gazetted posts and were clamouring for more. Could there be a more conclusive evidence of British instigation of the rising Muslim bourgeoisie?

The author correctly concludes that Muslim nationalism in India was always upper-class. Only in the thirties of the present century, Mr. Jinnah and other leaders began to appeal to the poor and downtrodden Muslim masses because they realized their political value. Absence of a well-organized proletariat class facilitated the deception of the Muslim masses by the bourgeoisie.

Surendra Gopal

*Bibliografiya Indii. By G. G. Kotovsky. Compiled by D. A. Birman and G. G. Kotovsky with the assistance of A. Wafa and N. V. Untilova, Moscow, 1965. Pp. 608.*

Russian interest in India began about five centuries ago when Afanasi Nikitin visited the country. Subsequently, Russians continued to show an ever-increasing desire to learn more about India, for relationship between the two countries grew more intimate. From the seventeenth century we have continuous account of colonies of Indian merchants in Russia. The Russian czars, aware of the huge profits some western European nations were reaping as a result of trade with India, wanted to participate, and hence encouraged acquisition of knowledge about India. Soon the emergence of political factors like the establishment of British rule in India, growth of Napoleonic power on the continent and Russian expansion in Central Asia widened the Russian desire for more facts about India and Indians. Since then India has never been out of the Russian mind. The present bibliography unfolds before the reader the Russian efforts to know and interpret India since the late eighteenth century and also its accomplishments in the field of Indology.

The present volume, a joint effort by the Institute of Asian Peoples, Moscow, Fundamental Library of Social Sciences, Moscow, and the Institute of Orientology, Tashkent, lists 9073 titles (books, articles, reviews, translations, etc.) on diverse subjects relating to India which were published up to 1961. The range of subjects covered is staggering. Starting with the study of customs, manners, religion and philology in the last decades of the eighteenth century (some field-work in this connexion was also done among Indians living in Russia then), in course of time Russian scholars extended their labours to philosophy, history, economics and

contemporary events. The upheaval of 1857 further excited Russian interest. The opening of the Suez Canal in 1869 made contacts between the two countries more intimate by reducing shipping distances. Henceforward Russian agronomists, geographers, botanists, medical men and anthropologists also started visiting India for carrying out researches. Thus Russians were able to keep their compatriots well informed about India.

After the November Revolution of 1917, the scope of Indian studies in the Soviet Union further widened. Their methodology acquired a Marxist flavour and a new school of Indology began to develop. Similarly works about India also began appearing in languages other than Russian in the Soviet Union.

The editor, G. G. Kotovsky and his associates have performed a highly useful task and deserve gratitude of all those interested in Russia and Soviet studies on India.

Surendra Gopal

**Kacty v Indii.** *Chief Editor G. G. Kotovsky, Nauka, Moskva, 1965.*  
*Pp. 348.*

The book under review is a collection of seventeen articles out of which fifteen are devoted to the study of various aspects of the caste system in India from ancient to modern times. Of the remaining two, one deals with the Varna system, as it prevails in the island of Bali today. The remaining paper discusses the Varna system in Angkor (Kamboj) in the IX-XIIth Centuries. At the outset there is a long introduction by the editor wherein various theories with regard to the Varna and the caste system have been critically examined. One cannot, however, agree with the sweeping remark of the learned contributor that law framed against untouchability by the Government of India has remained a dead letter in the villages.

Mrs. Maretina's article on the Varna system in the island of Bali is significant because it provides a new perspective on the problem. The first three Varnas in Bali cover about 10% of the population, which incidentally forms the upper crust of society. The remaining citizens who include the working and the professional classes are dubbed there as Sudras. The Kshatriyas exist only in name as they have been almost completely assimilated by the

Vaishyas. Mrs. Maretina rightly does not call this system by the name of 'Caste' as understood in India, because some of its important characteristics are missing. Similarly, Sedov shows on the basis of contemporary epigraphic evidence that in the kingdom of Angkor in 974 A.D. there existed seven Varnas and in the same year their number rose to nine when the king created two new ones. Caste as such did not exist there. One only hopes that Indian scholars will realize the necessity of studying the social, economic and cultural institutions of neighbouring countries, at least for the sake of better and deeper understanding of indigenous institutions.

There is an excellent study of Nehru's views on the caste system by A. H. Wafa. An independent article on Mahatma Gandhi's struggle against untouchability would have made the book more comprehensive and useful.

Surendra Gopal

**Narody yuzhnoi Azii (Peoples of South Asia).** *General Editor, S. P. Tolstov. Publishing House of the Academy of Sciences, USSR, Moskva. Pp. 964.*

The Institute of Ethnography, Academy of Sciences, USSR, has been publishing comprehensive monographs on different countries with a view to acquainting readers with the way of life of the people concerned, not only as it is today but also how it has evolved over the centuries since the time man made his first appearance. This approach implies the description of diverse forces, ethnographic, social and geo-political etc., which have moulded ways of life. Hence, it is a task which can be undertaken only with the support of specialists in different fields. The book under review is the result of the joint effort of the two institutes of the Academy of Sciences, USSR, of Ethnography and of the Peoples of Asia. In the latter more than a hundred scholars are presently engaged in research on various problems of Indian history, economics, languages and literature and philosophy etc.

The book covers the Indian subcontinent, the Maldives Islands, Ceylon and the Andamans. The first part of the book gives some general information about the geography, population, language and anthropological composition of the area and an outline of the

history, society, religion and culture of India and Pakistan. The second part takes up the important regions and segments of population one by one and the guide-lines of the first part are repeated and supplemented by details on present-day economy, society, customs, manners and religious beliefs, etc. In this way the reader is presented with the important facts not only of the contemporary life of the people but also of the past. The author rightly stresses the significance of the study of the ethnic history of ancient Bihar because it can throw a flood of light on the ethnic history of contemporary India (p. 282).

However, a book of this type, dealing as it does with a country like India, when rapid changes in all branches are taking place, has an obvious drawback. Facts, even before they can appear in print, get out of date. But the authors are hardly to be blamed.

The publication is useful, both to the average reader as well as the specialist. Some errors of detail have crept in but they do not in any way detract from the merit of the book.

Surendra Gopal

**Married Life in an African Tribe.** By I. Schapera. Faber and Faber Ltd 24 Russel Sq. London. Pages 364 with Index, plates. 36s.

This second edition of an intimate study of the relation between sexes in a primitive community in Africa and very frankly (a little too frankly) described by a Professor of Anthropology at the London School of Economics is a valuable addition to the fast-growing anthropological studies in that area. Not many of the studies of this type have the scholarly approach evident here to a study of the problem from the different view-points, namely, economic, social and psychological.

The author has also gone into the problem of the changing circumstances which have been ushering in a new age when the wife no longer allows her husband the previous latitude of ill-treatment coupled with his free liaison elsewhere. The author has been a little too brief, however, in discussing the main causes of change. But the studies he has given should be an excellent base-line for a study of the problem a decade or two after.

Throughout the book one is struck by the strong common sense and materialistic attitude towards life the Kgtalas have and the reasons for it.

Professor Schapera has to be congratulated for his valuable contribution.

P. C. Roy Choudhury

**The World of the First Australians.** *By R. M. and C. H. Berndt. Ure Smith, Sydney. Pp. 509 with Bibliography and Index, 32 illustrations, maps and charts. 85s.*

This book can be treated as a standard and authoritative study of the Australian aborigines. The authors have done a very painstaking and thorough study and have stressed on practically all that counts in the life and economy of the aborigines of Australia, who are fast changing due to factors beyond their control. In this book we find the study spread over different types of the primitives in different grades of contact with Europeans. Naturally the authors have paid particular attention to their sex-life and have frankly recited their conclusions. The culture of the indigenous people as indicated in their art, song and story, their social solidarity which is maintained by their indigenous institutions, their administration of law and justice, their economic, religious and social life etc. have been carefully and sympathetically analysed and interpreted. The authors have rightly discussed in the last two chapters, Death and After Life and The Aborigines Today. It is interesting to see how the impact of the outside world influences their traditional life and how the process of assimilation goes on.

The excellent plates, charts, figures and maps have greatly enhanced the value of the book.

P. C. Roy Chaudhury

**Totemism in India.** *By John V. Ferreria. Pp. 304 including Bibliography and Index. Oxford University Press, 1965. Rs. 17.50.*

The book is a modified version of a dissertation presented in the University of Vienna for the Ph. D. degree by the author. In the year 1933, Hermann Niggemeyer made a very

thorough and compact study of totemism in India which was published in the *Anthropos*. Since then much new material, specially concerning the tribes of Central India, has been gathered, necessitating a fresh appraisal of the subject.

The book is divided into twelve chapters, namely, Introduction, The Nature of Totemism, Indian Totemism, The Munda-speaking Tribes, The Gondid Tribes, The Bhil, South India and Maharashtra, The Negrito of the Andaman Islands, The Tribes of Assam, Interpretations, Totemism and Acculturation and Conclusion.

The book makes an exhaustive study of the nature and extent of totemism found in India. While treating the subject it does not merely present ethnographic details but goes into analytical depths. Moreover, a survey of the various theories developed by different scholars about totemism in general and Indian totemism in particular, adds much to the value of the book. It can be regarded as an important contribution to Indian ethnography.

K. N. Sahay

**The Political System of the Jats of Northern India.** By M. C. Pradhan, Oxford University Press, 1966. Pp. 275. Rs. 25.

The book under review is a valuable contribution to Indian anthropological literature. Using the structural and functional framework, Dr. Pradhan has given a detailed analysis of the Jat kinship organization and has shown its relation to the political structure of the community. He has also compared the traditional political system with the new statutory panchayat system introduced by the Government. He says that the traditional political system is more effective and functions more comprehensively than the newly introduced political institutions at the village and inter-village levels (p. 236).

The great value of the book lies in the fact that the theoretical model has been well documented by rich historical case material drawn from as far back as 1580 A.D.

The book will prove useful to students of the political institutions of the Indian peasantry.

B. Minz

